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LECTURES

ON THE

PROGRESS OF ANATOMY AND SURGERY.

By the same Author,

A SYSTEM OF PRACTICAL SURGERY,

With 410 Engravings on Wood.

Fourth Edition, fscap 8vo, 12s. 6d.

LECTURES

ON THE

PROGRESS OF ANATOMY AND SURGERY

DURING THE PRESENT CENTURY.

BY

SIR WILLIAM FERGUSSON, BART., F.R.S.,

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LATE PROFESSOR OF HUMAN ANATOMY AND SURGERY TO THE ROYAL COLLEGE OF
SURGEONS OF ENGLAND, &C., &C.

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TO

DR JOHN G. M. BURT, F.R.S.E.,

LATE PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS
OF EDINBURGH, ETC., ETC.

IN TESTIMONY OF HIS PROFESSIONAL EMINENCE AND SOCIAL WORTH,

AND IN AFFECTIONATE REMEMBRANCE OF

AN UNINTERRUPTED FRIENDSHIP OF MORE THAN FORTY YEARS,

BY

HIS EARLY SCHOOLFELLOW,

THE AUTHOR.

PREFACE.

THE first six of these Lectures were delivered in the month of June 1864, and the rest in the same month of 1865, at the Royal College of Surgeons of England. They were published soon after in "The Lancet;" and by the polite and liberal permission of the proprietors of that journal, the original woodcuts have been placed at my disposal for the illustration of these pages.

The subjects with which they profess to deal are so large in their scope, that twelve lectures of an hour's length each were by no means sufficient for the intention. Other engagements prevented me going more extensively onwards; and, as was professed at the time, I restricted myself chiefly to matters and departments in which I could speak with the confidence of personal experience.

I might now, with further experience, give additional development to some of these Lectures, and add others on themes not alluded to; but I have preferred republishing the original in this collected form, as they were delivered.

The larger share of attention given to Surgery over Anatomy, may be accounted for by my professional position; and I confess to a supposition that, in selecting me as Professor, the Council of the College looked chiefly to my qualifications as a Surgeon. I entertain hope, however, that the originality of my investigations regarding Hare-Lip and Cleft Palate may not be considered unworthy of the Chair of Anatomy, which I had the honour to hold.

One subject to which attention was specially called in these Lectures—viz., Excision of the Knee—has, since they were delivered, been further elaborated by the posthumous Essay of my distinguished pupil and friend, Mr Price, published under the superintendence of Mr Henry Smith, who himself has seen more of the operation than any other man, and by the Jacksonian Prize Essay of my friend and former pupil, Mr Wm. P. Swain of Devonport, recently published in the "British Medical Journal;" and I might myself have added further illustrations. On Hare-Lip, Cleft Palate, Lithotrity, and Lithotomy, I might have done the like. For reasons given in some of the Lectures, I felt restricted to certain salient points: much that I wished to say was, of necessity, omitted; but possibly, should these humble efforts receive a fair approval among my professional brethren, I may, at a future date, put some of them in a more perfect form, and again throw myself on the favourable consideration of a profession to which I have been earnestly devoted for upwards of forty years.

16 George Street, Hanover Square,
October 1867.

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LECTURES

ON THE

PROGRESS OF ANATOMY AND SURGERY DURING THE PRESENT CENTURY.

LECTURE I.

INTRODUCTORY.

Mr President and Gentlemen,—When the honour was conferred upon me of being appointed Professor of Human Anatomy and Surgery to this College, I felt uncertain as to the manner in which I could best fulfil the duties pertaining to such an important office. Considering the vast fields of anatomy and of surgery which I had to choose from, the difficulty of selecting subjects for six lectures seemed far from great; yet reflection indicated that already the labourer had been at work. In most departments the harvest had been stored, and little remained to be gleaned or garnered which could possibly be put in comparison with the knowledge already in man's possession. To one who has been a labourer in our profession for well-nigh forty years such a selection might at first thought seem easy. A teacher of surgery for more than thirty years might surely feel at little loss for material; but that very fact in a manner tells the real difficulty, for as a teacher one is necessarily in almost constant contact with the profession, and whatever he may have fancied new or of value has already been made public by the usual channels. In conversations with assistants and friends, in lectures, in the operating theatre, in the pages of public professional journals, in papers for societies, in pamphlets, and even in portly volumes, the teacher of old standing and fair repute has already communicated his ideas to his professional brethren so freely and amply, that in his latter years he stands literally unburdened of all to which he may at any time have had original claim. It has been his glory to spread knowledge as readily and rapidly as it may have come within his own ken, and such originality as may have been his own has long since become the property of his profession.

The dilemma with me was that I had nothing new to say. More than twenty years' teaching in a London college and hospital theatre had in a manner "used me up," and, thinking of the kind of audience I might naturally expect within these walls, I had hesitation and doubt as to what might best suit the occasion.

Two courses came prominently before me. I might select a single subject, and say all about it that had been said before by others, and repeat or add all that I myself had said or thought further; or I might select several subjects in which I had myself taken special interest, or had peculiar opportunities of studying, and lay them before my hearers in such a way as to give the appearance of novelty and attraction to an audience assembled in the heart of London, and in the metropolitan abode of English surgery.

Of the two courses I have preferred the latter. If I have nothing to say that is new to my own mind, I may still labour, though in a somewhat novel sphere, to impress such truths as I have learned from experience, to doubt where I have reason still to do so, and to venture such suggestions and forecasts of thought as may become one who has spent his whole professional life in teaching, and who now finds himself in the responsible office of Professor of Human Anatomy and of Surgery in this great corporation.

About the year 1825, when my first intimate connection with the profession began, there was a period of calm (at least that is my impression) such as had not been for many years, and such as none of the present generation have seen. There was nothing new in British surgery, and little from abroad to attract special attention. The great impulse given by Hunter and his disciples had been in a manner embodied with, or as some might think, become the embodiment of the profession. On the Continent, amongst surgeons Dupuytren stood supreme; whilst Graefe, Lisfranc, Larrey, Dieffenbach, and Roux, were but a shade behind. The latter had written his celebrated "Parallel," and already Velpeau had indicated his growing worth. In America, the names of Mott and Warren were associated with the boldest deeds in surgery. Here, amongst ourselves, Home, Cline, Blizard, Abernethy, Cooper, had passed away, or well-nigh faded from the scene. The same might be said of Todd and Colles in Dublin. Crampton, Carmichael, and Cusack worthily held the highest places in that city; and Brodie, Travers, Wardrop, Guthrie, Anthony White, Key, Stanley, Green, and others yet alive, whose names and deeds inspire veneration, held sway in the great metropolis. In Glasgow, John Burns laboured, I may say alone, in a field which had been previously occupied by himself and his worthy brother Allan. In Edinburgh, the reputation of the Monros gave high character to the anatomical and pathological aspect of surgery, and the family reputation was maintained by the third of the name. The brilliancy of John Bell had in the early part of the century given great *éclat* to the school (which was enhanced by his brother Charles, whose name may be honourably included amongst the worthies of London, at the time I speak of), and the solid worth of Benjamin Bell had given a high character to Edinburgh surgery.

About this date the field of surgical practice in the northern metropolis was held by gentlemen of high social and professional stamp, but they were neither professed teachers nor long-experienced hospital-surgeons. Each had served a few years only as full surgeon in the Royal Infirmary. One (Mr Wishart) had published translations of Scarpa's works on Aneurism and on Hernia, but others were unknown to more than local fame. From this list I may bring out and except the name of Russell, the author of an original and still standard work on Necrosis, and at that time revered as a surviving pupil of John Hunter. He was, moreover, the first Professor of Clinical Surgery, and the only one bearing such a title in the United Kingdom. His position as a model surgeon was, however, by no means prominent, and the "pure" surgery of Edinburgh (as the term goes) was little different from that which might be found in any of the large provincial towns in Britain. There was no chair of surgery in the University. That of the College of Surgeons (which was shortly after abrogated) was held by a clever man, whose health and temperament prevented him taking a foremost rank in practical surgery, and there seemed little hope for a continuance of the great reputation of this school, when suddenly there appeared on the scene three men, whose labours have added substantially to the renown of the Scotch school, and whose names will be imperishably associated with the history of British surgery. These men were, John Lizars, Robert Liston, and James Syme. I trust that I may be pardoned for making pointed allusion to these surgeons, but as it was from them that I chiefly gathered many of my own early views in surgery, I should not wish this opportunity to pass without giving them that honourable mention which, in my opinion, they richly deserve.

Mr Syme still lives in active manhood, with a world-wide reputation second to none amongst living surgeons. It is considered unbecoming to say that of one yet active on the scene which may be said in after years.

Modern surgery owes him much, as I shall show in future lectures. Eulogy might seem to partake of flattery, and for my present purpose it may be sufficient to state, that at the date referred to, this gentleman evinced all that energy of character and aptitude for clinical teaching and for practice for which he has since become so distinguished.

Mr Liston's fame at this date, particularly as an operator, was well-nigh as great as at any period of his comparatively short but brilliant career. In after years his soundness as a pathologist became more conspicuous; and the numerous valuable preparations in the museum of this College, which formed part of his collection, bear ample testimony to the greatness of his doings in practical surgery. Both he and Mr Syme had already published those remarkable essays on Amputation which, with the example set by their practice, went far to give that development to the flap operation since attained. Many circumstances contributed to give Mr Liston early fame in Scotland. A well-developed frame, a broad forehead, a strongly marked, handsome countenance, indicative of great courage and decision, and an eye of piercing brilliancy and great expression, at once impressed those who sought his aid with a conviction of his powers. With these were associated a hand alike marvellous for its great size, its silent expressiveness, its vigorous firmness, its lightness, and its dexterity. It was aptly said of it by a distinguished lay contemporary and admirer, the late Lord Robertson—" If hard as iron and true as steel in the theatre of operation, it is soft as thistledown when applied to the throbbing pulse or aching brow." The remembrance of that hand is still fresh on my memory.

Some early operations of great magnitude and comparative novelty, aided by a certain amount of jealous opposition which merit is sure to call forth, brought Mr Liston's fame impressively before the public; and among his achievements may be mentioned the successful removal of a scrotal tumour of more than forty pounds' weight,—the first operation of the kind ever performed in this country,—and successful ligature of the subclavian, which had been essayed in vain by Ramsden and others in Britain.

When personal recollections have passed away, there will remain much to associate Mr Liston's name with surgery, but the greatest features of his teaching powers will be forgotten. With less than average facility of speech, he had a manner in all that he did before his pupils that produced the deepest impression; and there was a style in his operations which has had more influence in this department among a large number of pupils than has been produced, in as far as I can make out, by any other man in the history of surgery. Only those who have seen him can thoroughly appreciate what I now say.

Of Mr Lizars there is now probably less known than of the two gentlemen just referred to; but his fame was great at the time. His folio work on Anatomy, with which he incorporated most of his views on operative surgery, had contributed largely to his reputation. Initiated to the profession by John Bell, to whom he served a pupilage, he seemed to have imbibed some of the characteristics of that great surgeon. He was a very successful teacher both of anatomy and surgery, an excellent pathologist, a brilliant and daring operator. His name will ever remain associated with the early history of modern operations on the upper jaw. He was the only man in Scotland who had placed a ligature on the innominata. The operation was unsuccessful; but it went far to prove, what was then not so well recognised as now, that secondary hæmorrhage in such cases is more likely to come from the distal than from the proximal end of a tied vessel. He was the second to perform ovariotomy, and its practical originator in Britain. Like many pioneers in art and science, he was for this assailed by a certain amount of ridicule associated with vigorous opposition, and thus was thrown into abeyance an operation which, thirty years later, has produced as much excitement as has been associated with the early history of any great surgical proceeding. Whatever may be the fate of ovariotomy, the name of John Lizars must always remain associated with it.

I may be wrong, but the impression is strong on my mind, that an impulse to the more accurate study of surgical anatomy arose coeval with the development of the Hunterian operation. Before I knew the profession, all the great arteries had been tied, from the superficial femoral to the abdominal aorta and innominata, on the principles of our great surgical philosopher. The surgical anatomy of the arteries had occupied the attention of many first-rate anatomists of the early part of this century; and whilst the operations in question were excitingly attractive, others were not overlooked, and hence surgical and regional anatomy took a wider field, and the works of Charles Bell, Abraham Colles, Astley Cooper, John Shaw, Hargrave, and of others, testified to the zeal and accuracy of surgeons in those times in anatomical pursuits having direct relation to their calling. It is an anecdote worth bearing in mind, that when Astley Cooper was engaged in his great and interesting labours on hernia, nothing would satisfy him but a sight of the fact that the obturator artery might encircle the inner side of the neck of a crural hernia. The first preparation that gave this proof was in the museum of the famous teacher of anatomy in Edinburgh, John Barclay (now incorporated with the collection of the Royal College of Surgeons of that city), who actually forwarded it to London to satisfy the hesitation of the great surgeon. It was returned with most complimentary thanks; and this anatomical fact, now familiar to the simplest novice, was soon after made extensively known to the professional world.

There were manuals of anatomy in those days, written by men who have since held the highest professional positions, which really left little for the practical surgeon to desire; in fact, the subject was in a manner exhausted. Whatever was essayed as novel, seemed in reality but a repetition of something already done and known; and, with an occasional exception, there was little left for the modern anatomist but transcendentalism and minute observation. Investigations on ill-defined and obscurely developed quantities have, I fear, taken largely the place of wholesome surgical anatomy; and whilst I shall not go so far as to say that they are not of great value to the education of the practical surgeon, I may state that I have often felt inclined to protest against a system which seems to draw little or no distinction between this kind of so-called philosophy and that common place, but common sense, anatomy which is of essential service to the practical surgeon. With some it almost appears as if the bulk of the two thousandth part of an inch were of equal importance to the surgeon as the outlines of the sterno-mastoid or deltoid muscles; and with many it seems to be that there is really little or no difference of essential value between "blastema" and bone, "molecule" and muscle, "cytoblast" and cellular membrane!—nay, actually that once familiar term is now in some degree tabooed, and a man's acquirements are suspected if he does not use instead the modern one of "areolar tissue."

In surgical pathology, it was known that a person might live with an obliterated aorta, and might survive the loss of an upper or lower extremity. Inflammation with denudation of bone was commonly believed to necessitate amputation; and diseased joints with ulceration of cartilages, particularly if denoted by crepitation, were generally deemed incurable, excepting by removal of the limb. Tumours of enormous size were frequently met with, and the disease then familiarly known as fungus hæmatodes was more common than in the present day: in both instances doubtless from timidity on the part of those who feared to meddle with what the modern surgeon arrests in early progress. But a vast amount of important material had been accumulated by the practical men of the day, and the works of Lawrence on Hernia, Brodie on the Joints, Thomson on Inflammation, Hodgson on the Arteries, and Cooper on Dislocations, may be referred to as types of the most valuable and precise surgical pathology which had been given to the profession. Pupils and practitioners had for study and reference in surgery, and to some extent in anatomy, the standard works of Boyer, of Benjamin Bell, of John and Charles Bell, of Abernethy, and of Samuel Cooper, whose "First Lines" was for long the favourite text-book, and whose famous Dictionary has, perhaps, not been excelled even to the present day.

Some naval and military surgeons had contributed largely to our general knowledge. Besides the labours of Hunter and of John Bell in these departments, it is in accordance with the intended spirit of this lecture that I should refer to those of Veitch and Copland Hutchison, of Larrey, of Hennen, and of Guthrie. Although I am myself disposed to take exception to some of the doctrines of these gentlemen as being invariably applicable to the practice of surgery in civil life, I willingly acknowledge the great merits of those who gave us so much information after the cessation of our wars with the first Napoleon, and that much additional material, of unquestionable novelty and value, has been added to our stores by the publication of the so-called military surgery of that eventful period.

In Smiles's "Lives of the Engineers" a dozen or more of those who first worked in this noble science are told off, each with a brief, yet interesting memoir, comprised within a few pages; but as engineering has advanced in the progress of time, the works of Vermuyden and Myddelton, of Metcalf and Brindley, seem to be surpassed by those of Smeaton, Telford, and Rennie, until at last a whole volume is required for the life of the elder Stephenson. Were we to compute the progress of surgery in a similar manner, to what limit might the lives of great surgeons not go? To look within the present century, volumes might be written, in which most of the names already mentioned would stand preeminent, and it would not be difficult to mark out many of the living generation with whom the progress of surgery is closely associated. It is the boast of those who live in the nineteenth century, that progress in all that pertains to civilisation has been greater than in any similar period in history. I cannot venture to claim for surgery the world-wide impression that has been made by steam, by electricity, by engineering, or by mechanics. Yet our art and science have not stood still. If there have been changes and reforms in our laws and civil institutions for the improvement of our social atmosphere, (and who can entertain a doubt on the subject?) we may point to our changes, our reforms, our improvements also.

Few things have struck me as more remarkable than the simplicity of appliances and dressing in modern surgery among the best-class practitioners. This arises, I believe, from a better appreciation of the powers of nature, and a more humble idea of our own as to forcing that which can only come in time. It is perhaps in the increased knowledge and better treatment of wounds that the true philosophy of surgery has been most evinced in modern times. The days of the "secret dressings" and of "sympathetic powders" have passed away; and such a man as Colbatch, whom John Bell designated as a "respectable quack," or a pretender like Sir Kenelm Digby, were he even, like that famous man, secretary to a king, would have no influence on the profession and little on the public now-a-days. Yet Digby, had he belonged to our profession, would nearly have been a philosophic surgeon. If, after bringing the edges of a wound into accurate contact, and keeping them so by simple means, instead of affecting mystery and enacting the part of a mountebank, he had told his patient that he had done all that man could, and that nature and time would do the rest, he would have struck the key-note of that which constitutes, in my opinion, a great feature in modern practice. The secrecy and sympathy consisted, in reality, in simplicity; and it remained for John Hunter, and for what John Bell called "the London school," to give us our present views on such subjects.

Professor Hughes Bennett of Edinburgh has in recent years insisted much on what he calls "rational medicine," the term evidently implying the existence of a converse practice. It is not for me, in my present position, to say much about the practice of physic, but I do not hesitate to say that there is room for "rational surgery" to make useful way. "I cure," or "we cure," is too much in our vocabulary, and it would be more in accordance with the knowledge we possess of nature's actions were we to affect less in this respect, whilst there is a broad margin on which the guiding head of the surgeon might take full credit. It has, indeed, been truly said that surgery is the handmaid to nature; and when the service is judiciously administered our work appears in the greatest perfection. Nature, in many of her inscrutable ways, does that which offends our common humanity: she brings us fevers, atrophies, consumptions, and cancers, over which we have but little control. Livingstone has told us that in parts of Africa where the lights of civilisation have not yet appeared, most of those diseases which are at present the scourge of Europe have not yet been seen. May it not be that our boasted civilisation has brought upon us many of those "evils" which, with a sort of negative consolation, we say, in poetic language, that "flesh is heir to?" Does not the very style of living interfere with nature's healthful actions in civilised man? Who in these islands can boast of success in lithotomy such as that obtained by our surgeons who practise in Asia? Were cases of elephantiasis scroti prevalent among us, is it likely that we could boast of saving twenty-two patients out of twenty-four operations? Yet such success has been recently recorded by Prof. Ballingall, of the Grant Medical College, Bombay.* With all deference to our friends and contemporaries, it cannot be admitted that this success comes from superior skill or dexterity; it is from the subject on which they work—the nearest approach to perfect nature, irrespective of what we fondly call civilised habits.

In speaking of wounds, I should not be doing justice to my own views and experience, nor to the efforts of others, were I to omit reference to the more common use of stitches than was sanctioned some thirty or forty years ago. When early and perfect union is desired in a line of considerable length, they far surpass other methods, and when judiciously applied (possibly in many instances with a due share of additional support) they are of the utmost value. Throughout my experience I cannot say that I have seen the slightest evil arise from them, whilst the best possible good has often been derived. In fact, some of the greatest triumphs of modern surgery are associated with this simple mechanical process; for how else could so much have been done with those vesico-vaginal fistulæ which so baffled our forefathers, and are now so amenable to skilful operative management? How else could the operation for cleft palate have been successfully accomplished? How else could we have dared to lay open the walls of the abdomen to the extent of six, twelve, or fifteen inches? Much has been said in recent times of the superiority of the wire over thread as the material for the stitch; but for my own part I deem the subject of comparatively little importance, whilst I do not hesitate to proclaim my preference of common silk thread for general use.

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* Transactions of the Medical and Physical Society of Bombay, 1862.

Until within the present century there was no positive remedy for stone in the bladder but a painful and dangerous cutting operation. The highest talent, skill, and manipulative dexterity have been evoked to set aside the dangers of that proceeding. Surgeons have cut twenty, thirty, fifty patients, losing perhaps only one; but a more extended experience has had the effect of bringing the average of fatality down to the certain loss of one in six or ten. Men have vainly prided themselves on their success; some because of the peculiar shape of a knife; some on the supposition that they have operated more dexterously than others; and superior success has even been claimed on account of a special prayer and appeal to the Almighty just before commencing! We know full well how in the mysterious ways of Providence man's best efforts have failed; his holiest aspirations have seemingly been thwarted.

Happily we of the present day have lived to see the perils and uncertainties of lithotomy set aside in a large number of instances by the less formidable and possibly more successful proceeding of lithotrity. The development of this operation has been within our own time. It is of foreign origin, and British surgeons have taken slowly to it. Until within these twenty years it was practised by few, but latterly it has come into more general use; and if patients would but apply at an early date, when the stone is small, the judicious employment of this operation would go far to supersede the use of the knife, and make lithotomy exceptional. As evidence of the high and useful character of the operation, it has been applied alike to the peasant, the artisan, and the wearer of a crown. Whilst we do all honour to the labours of Gruithuisen, Le Roy, Heurteloup, Costello, and especially Civiale, in developing this proceeding, it is worthy of note that the essential features of the instrument now in use—namely, the male and female blades, with the sharp curve at the end where the crushing is to be effected, and the screw force for that purpose—are of English origin, having been devised by the late Mr Weiss, our celebrated instrument-maker.

For my own part, I am almost disposed to consider that the treatment of distortions by division of tendons, muscles, and fasciæ,—a treatment founded on a better appreciation than formerly of anatomy, physiology, and pathology,—constitutes perhaps the most striking example of modern improvement which I could bring under your notice. What can be more creditable to surgery, or to our character in the nineteenth century, than such a sight as this? Here (fig. 1) is a very tolerable human figure, turned from such a distortion as this (fig. 2). I take the greater pleasure in referring to this case, as it was treated by one of our provincial surgeons—Dr Wiblin, of Southampton—who in the discharge of his duties, like many others of his fellow-labourers, undertakes the treatment of most ailments that come within his cognizance with energy, skill, and success, such as may well be admired, possibly envied, by his metropolitan contemporaries. Cutaneous puncture and subcutaneous division with a narrow blade, so as to prevent the access of air, make Stromeyer's name worthy of honour in all time to come; and the development of new tendon in some of these cases is a fine illustration of what Nature will do where man judiciously interferes with some of her imperfect works.

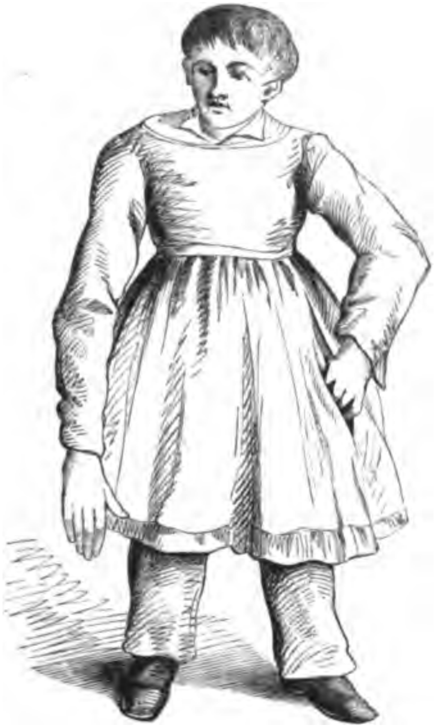

Fig. 1.

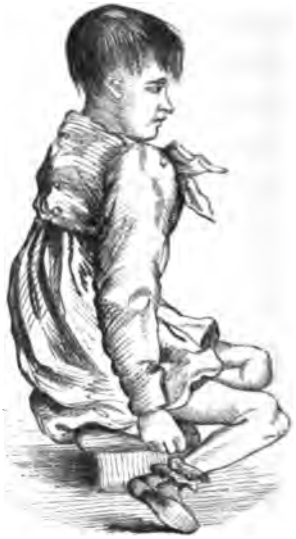

Fig. 2.

How hopeless was our practice for strabismus in former times! We neither knew the cause nor the means of cure. Now observe the effect of the scientific reasoning of Dieffenbach. In the generality of such cases the division of the internal rectus of the eye restores the symmetry of these important and attractive organs. Here the simplicity of the idea almost leads us to overlook its magnitude and scientific character. The illustrious Roux thought his achievement great when he could close by operation the cleft palate as if it were a hare-lip, and be successful in securing union in two cases out of every three operated on. It is my intention to show you in some future lecture how, by division of the levator palati on each side, the operation may be rendered almost as certain in its results as that for fissure in the lip, and that the average of failures is about 1 in 27 or 30.

The skill with which raw surfaces are made and approximated says much for modern progress. Our plastic operations are more marvellous than ever entered the imagination of Taliacotius or the poetic mind of Butler. The almost fabulous transplanting of one part of the body to a distant surface has been realised. The skin on the back of the neck has been lifted forwards to supply a deficiency in front, and a portion of the skin of the abdomen has actually been made to do permanent duty on the forearm. Amongst plastic operations, and as illustrative of the value of union by the first intention, I may here refer especially to reparations on the face, and to the closing of wounds and unnatural openings in the urinary organs and parts of generation, particularly in the female. A word of praise in these departments is justly and specially due to our Transatlantic brethren, and amongst ourselves there are many whose triumphs in these cases do the utmost credit to modern surgery.

The application of the stethoscope to surgical diagnosis, the exclusive use of the microscope in pathology, the invention of the laryngoscope and its recent application in practice, are all interesting features in modern surgery. The ophthalmoscope, too, is one of the most ingenious and clever inventions for which surgery is indebted; nor can there be a doubt that, in special cases, the speculum is also of vast service. But I must leave it to greater enthusiasts, and those more skilled than myself, to dilate upon the marvels divulged by these instruments, and to fix upon their relative value as additions to the surgery of the present century.

Ophthalmic surgery has made wonderful strides within our own time; but I do not profess myself competent to dwell on such a theme. It is pleasing to see that those who excel in this department, particularly amongst ourselves, are gentlemen who, from their education and competency, are fitted to hold the highest places in general surgery, and that many of them have held, and now hold, the foremost rank in our profession. Let me here express a hope that some future professor in this chair may be able to say as much for all who may devote themselves to the specialties of modern custom.

Excisions, or resections,—the words seem synonymous,—have claimed a large share of modern attention; for although we owe to the last century many such proposals and several examples, it is within the present that much has been said about them. Here is a sketch* (fig. 3), showing the whole of the ulna with an inch and a half of the lower end of the humerus, which were removed by Staff Surgeon Williamson. The other picture (fig. 4) shows the arm twelve days afterwards. There was a rapid recovery from the wound, with a useful arm and hand, including free motion of the joints. Unfortunately, this person died of consumption between two and three years afterwards; but the case is one amongst many showing the progress of modern surgery; and, ere these lectures are done, I shall have many of a like kind to refer to. But time presses, and I shall conclude

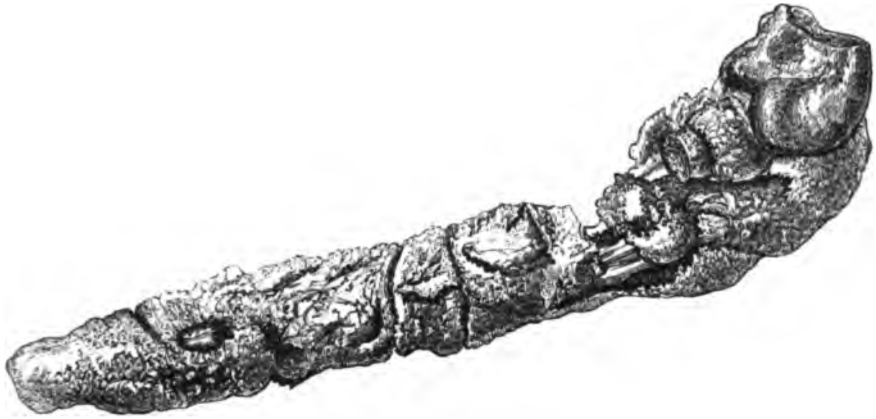

Fig. 3.

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* Williamson's Military Surgery, 1863, p. 227.

my present address by reference to some matters which need not be dwelt upon in other lectures. Of these, that of anæsthesia may be deemed the most remarkable. No single appliance in surgery can, in my opinion, be compared with it; for although before its discovery most, if not all, of the great achievements of our art had already been accomplished, the amount of suffering which can now be set aside enables us to relieve surgery

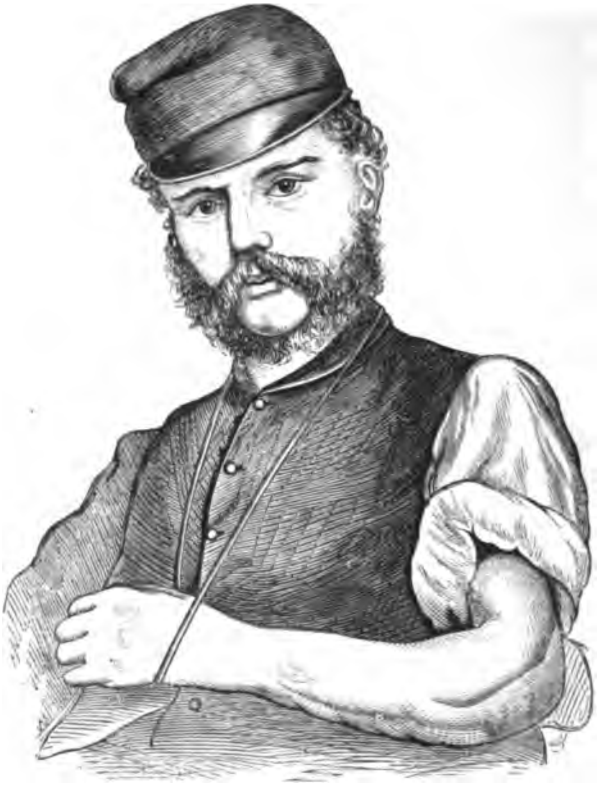

Fig. 4.

of much of its horrors, and to exclude from the patient's senses that which was anguish, suffering, and torture; whilst, generally, it permits the surgeon to perform his duty with a serenity of thought and action quite unknown to his predecessors. On this subject America again must have the palm of precedence. There sulphuric ether still holds the first place as the anæsthetic agent; whilst with us chloroform, whose influence was first observed and made public by one of our contemporaries, is considered the most useful. Not long ago Dr Marion Sims, with laudable enthusiasm, claimed for metallic stitches the honour of being, in our profession, the greatest discovery of the nineteenth century. Few surgeons of practical experience, however, will endorse this. I see nothing which has transpired in the present century which, in magnitude or importance, can compare in our annals with anæsthesia; and, in my mind, it ranks in value to mankind scarcely less than the results of the labours of Harvey and of Jenner.

We congratulate ourselves that we have been permitted to live in times when man has displayed his mastery over steam and electricity, and with us and our special profession there have been agencies at work whose usefulness may be said to be literally beyond calculation. I allude to the improved facilities for education, to our social professional customs, to the medical press, and our own special literature. Our schools have increased in number; our great public hospitals associate, more extensively than ever, education with charity; our handbooks, our works of reference, our means for learning, our appliances for teaching, are beyond compare; and facilities for studying anatomy have, by a wise legislation, been placed lawfully within reach. Our societies and professional gatherings have encouraged and facilitated the diffusion of knowledge; man meets man face to face; thoughts flash almost simultaneously from brain to brain; and there is no longer a difficulty with those in places distant from a metropolis to find out even some roundabout way of communicating interesting or useful knowledge to the profession. A surgeon to a Liverpool hospital in the present day need not, as Park did in 1782, address himself to a leading hospital surgeon in London to give currency to his aspirations; nor need the Moreaus of our day keep their originality under the "cold shade" of an academy or a corporation. Besides the facilities for individual and independent publication, there are our quarterly, monthly, and weekly journals to carry knowledge to the ends of the earth. We pride ourselves in this country on the liberty of the press; we fondly call it our fourth estate; politically and professionally it may be called the pulse of the public mind; and amongst ourselves in our own time it beats with a healthy vigour, indicative of all those changes for the better which I have endeavoured to sketch, although I fear but feebly, within the limits of a single lecture.

LECTURE II.

ON CONSERVATIVE SURGERY.

MR PRESIDENT AND GENTLEMEN,—Bearing in mind the intentions expressed in my first lecture regarding the subjects to be selected, I propose to-day to refer to one in which I have been long and deeply interested. That which has largely filled the mind throughout professional experience, and which has gained strength by years, naturally takes a foremost place.

The grand object of surgery is to cope with injury and to cure disease. All professional men agree on this point; but there is considerable variety of opinion as to the means of accomplishing the end, and as to one form of cure being better than another. Patients ignorant of our resources say, "Give us a cure; that is all we want." But some of us are critical, and think upon the kind best suited to the circumstances. We reflect upon the nature of the accident or disease; its probable issue; how long it may be before a cure can be expected; and, that being realised, in our anticipations we think further of the patient's probable or possible condition when it is declared perfect. Here it may be said that we touch at once upon the grandest features of high surgery. With a full philosophical reliance upon the powers of nature, and a wonderfully accurate knowledge, gained from experience, of what she is likely to do in any given case, we take upon ourselves the task at one time of waiting upon her, but perhaps as frequently of guiding her, it may be gently, or it may be by rude force, and still with a reliance that she will not fail to do that which we desire, and so effect a cure, which shall be beyond doubt better than that which she might bring about when unaided by human skill. To wait upon nature is an easy task compared with that in which we attempt to guide or coerce her. Few men are more disposed than I am to give full credit to nature, but I believe it to be the mission of surgery to struggle with her when she is in error, and he who does this most successfully is the greatest master of his art.

As with many other things in social life, the ways of surgery get grooved. They are hallowed in the estimation of some. Because our grandfathers did so and so, it is often alleged that we cannot do better. Although our grandfathers were our seniors, it is overlooked that we are living at a date when the world is older by two generations. The man who steps from the groove is often held to be rash, and there are more to applaud the common wayfarer than to approve the conduct of one who may seem to doubt the entire wisdom of his ancestors, and who wishes to test by rational experiment if he can or cannot improve upon the known order of things.

Who can say that we have reached finality even in the grandest conceptions of the human mind? And who, when seriously questioned, can say this of surgery? The vast additions to our resources within the present century show how far surgery was behind "sixty years since." May it not be that additions equally great shall come within the next sixty? One thing is certain, that unless some men strike from the beaten track improvement and addition can hardly be expected. I have known hospital surgeons say that they should like very well to do this thing or that, provided it were proved to them practically. Supposing all surgeons alike in this respect, we should never get the proof. The man of inquiry may have at least three objects distinctly in view when he digresses from the beaten path. He may wish to produce novelty, or to get proof that a certain practice is so good that it should be more largely followed out, or so bad that it should be positively abandoned. Revivals are rarely attended with success, yet great results occasionally follow; and I cannot refer to a more striking instance than that of the treatment of aneurism by compression. Thanks to the courage and good sense of Dr Hutton of Dublin, a practice virtually abandoned was again brought under our notice; thanks again to him and his fellow-labourers in that city, it was shown to be of the greatest value. We often talk of schools of surgery, and, without discussing the worth of the term, I may say for that of Ireland that no brighter emblem is associated with any other in these islands. Here was a revival which set aside the use of the knife in a large number of instances where it was thought indispensable, and a practice re-introduced based upon principles almost identical with those which have been gradually developed since Hunter tied the superficial femoral artery for aneurism in the ham. Who among our fathers or grandfathers could have imagined that pressure was yet to become so valuable?—and who among ourselves ten years ago supposed that a popliteal aneurism could be cured by the retardation of the circulation effected by merely flexing the leg on the thigh?—a simple mechanical process indeed, yet founded on some of the best surgical reasonings which we possess.*

Looking to the old age of surgery, and the great men who have worked in the field, it is easy to perceive how rarely it must fall to the lot of any one to devise that which is new and also good. Even in such an instance the worth of the novelty is seldom quickly appreciated. The story of Paré and the ligature is familiar to all who know a little of our profession. May not a similar remark be made at some future day regarding Professor Simpson and acupressure? It actually seems to have escaped observation that even our great idol himself, John Hunter, scarcely was aware of the full value of his operation, while it was derided and opposed by those in high places. Hunter spoke modestly and hesitatingly of his own opinions; Bloomfield and Pott gave them their decided opposition. A leading surgeon of the day used the following words:—"An extravagant proposition has been suggested by some people to tie up the principal trunk of an artery in the extremities. I once saw an attempt of this kind in a true aneurism of the ham, in which I shall only remark that the patient died; and I do believe that the embarrassments which occurred, as well as the event of the operation, will deter the gentleman [meaning Hunter] who performed it from making a second attempt in a similar case."* Such was the language used regarding the greatest philosopher in surgery, and with regard to the views and actions that led to an operation which, in my opinion, contributed more to the brilliancy and progress of modern surgery than any other that I can name.

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* See Mr Ernest Hart's paper in the "Medico-Chirurgical Transactions," vol. xliii.; "The Lancet," vol. ii. 1862, p. 155, and vol. ii. 1863, p. 705.

With such examples as these, let no man who has common sense on his side be daunted by the cry that "surgery is in danger" when novelty is proposed. Good is likely to come out of honest labour, although the best hopes may be disappointed; and as fair instances of the kind, I may remind you of the operations of tying the abdominal aorta and the arteria innominata. A caviller might ask, "What is the value of these heroic proceedings, as death has followed in every instance?" My answer is, that they may now be taken as important precedents that such proceedings should never again be attempted on the human body.

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* Hunter's Lectures, by Palmer.

Happily, men are found in every generation who do leave the beaten track, and their labours are looked upon with greater interest than those of others, for they are emphatically the men of the time. Their doings in a manner instigate, invigorate, and regulate the practice of the day; and when they are gone, if even a footprint be left, their names will stand prominent among those who have contributed to the advancement of surgery.

Amongst various characteristics of modern surgery, I shall now venture to draw special attention to a field in which I have myself been a humble labourer. To save life and limb is a grand feat; it may be said to be the highest reach in surgery. There is a stronger feeling abroad at the present time than when I was young, that amputation should be avoided by every possible reasonable means. Whilst watching on my own account, I perceived around me indications that others as well were thinking on this subject; and already proof had been given that the amputating knife was no longer necessary in many instances like those where it had previously been freely applied. That such a result has finally come about no one can hesitate to admit, and as a familiar illustration, I may at once refer to the treatment of disease of the elbow-joint. If synovial membranes, cartilages, and bones seem irremediably diseased, or, in other words, beyond hope of cure within reasonable time, instead of performing amptutation, the tissues chiefly affected are removed by a local operation, and the forearm, with hand, are left so little damaged that the limb may ultimately, as has often been proved, be nearly as useful as its fellow.

I feel almost ashamed at bringing forward such a commonplace illustration, as every well-educated surgeon of the present day must consider it; but I do so on purpose, for it is one which defies contradiction, and it is almost entirely a development of modern surgery. The original suggestion of Park, and its realisation by the elder Moreau, produced but little effect either in this country or abroad, notwithstanding the clear manner in which they were brought before the profession, in 1806, by Professor Jeffrey of Glasgow; and it was not until the operation was taken up by Mr Syme that it attracted any serious attention. Although claims have been put in for others leading the way in this direction, I cannot admit them as worth much consideration. Some of these cases are of mythical character. Those who dealt with them may be likened to the original settlers in Australia, who made roads and built bridges of the quartz in which gold abounded. Both were ignorant of the precious things they had in hand. I may refer to Sir Philip Crampton as one who zealously demonstrated the value of this operation; but even his influence would have been but little, and it was left for the energy of Mr Syme, at the surgical head of a great school, to place this operation on a sure footing, with a character of usefulness unexcelled in the range of surgery.

But this is only one of the examples, in which, in modern times, surgery has triumphed in setting aside amputation; and to illustrate my present task, I must glance, although rapidly, at additional instances of success in this direction.

I believe it to be a common opinion, that when a piece of bone is bare, or a joint grates, there is no probability of recovery in the part, and that amputation is the proper course. This, however, is a great error; for bare bone is covered again in many instances, and a joint may still be so far restored that there may be a certain amount of motion in it, or if not, there may still be a cessation of disease, with a useful member. Even when bone is dead nature causes a separation, and thus leads the way to its removal, either by spontaneous evolution, or by the hands of the surgeon; so that a limb may be retained with much of its original appearance.

These things are so thoroughly understood by most well-educated men of the day, that it may seem strange to allude to them; yet my own experience has told me that fingers and thumbs—ay, even large limbs—are frequently sacrificed, when a little waiting and judicious management might bring about a result far more creditable to surgery and advantageous to the patient.

It may seem to many almost beneath the dignity of my present position to bring such a case as this before you. A gentlemen of active habits, and in charge of a large establishment, to whom the use of the pen was of vast importance, had a bad whitlow in the end of his right thumb. An abscess was opened in due time, when the distal phalanx was found bare. Amputation was thereupon urged, but the patient objected. He was then, on taking another opinion, advised to wait a little. In a few weeks the bare bone, consisting of about one-half or two-thirds of the phalanx, was removed by forceps through the original opening for the abscess; and ere long the thumb, seemingly entire, was as useful as it ever had been. Let me add another case. A shoemaker—shall I say, to make the case more interesting, "a son of St Crispin,"—a great cutter in his way, had a thumb similarly affected; and he, too, was recommended to have amputation performed. But a dead bit of phalanx was extracted here also, and he, like the other patient, rejoices in a useful thumb to the present day. I might recite many similar cases; but, doubtless, most of you have had experience of the kind. If so, you will think with me, that amputation in such cases is not required; and that when done, it is a deplorable example of meddlesome, bad surgery. It is in reality, because I have seen so many cases of error in this direction, that I have made so bold as to bring them under notice in this theatre, where, naturally, only the so-called grand things in surgery may be expected to be spoken of. Opinions may differ; but for my own part, I deem it a grand thing when by prescience even the tip of a thumb can be saved.

I have the additional reason, too, for alluding to such cases, that they serve to illustrate a kind of practice in which I have for two-thirds of my experience as a professional man been deeply interested, and to which I have ventured to give a name as if it were a special department in surgery.

With a conviction, founded on practical experience, that many limbs and members had been sacrificed by amputation, which might have been saved—that deeds had been done which, on a superficial glance, seemed as high art in our profession, when in reality they were indications of weakness, being the very *opprobria* of our calling—I ventured to draw attention to such matters in a paper in the "Medical Times and Gazette," published on the 3d of January 1852, wherein I first made use of the term "Conservative Surgery."

It would indeed be arrogation were I to affect being the first in such a field of practice. In the paper referred to, I showed how others had been before me; and it may be truly said that all surgery is conservative, its grand object being to save limb and life. Yet the phrase was new in surgery, and was used in a particular sense, which it is partly my object to explain in this lecture. It is, indeed, with feelings of pride that I see and hear it used so familiarly. It is now a part of our common nomenclature; it is often in the mouths of those who know not its origin; it is used by military practitioners as well as civil; it has become familiar in our provinces and colonies, and has resounded even from the antipodes. It was, in a manner, hallowed when used as applicable to the practice of one of the last departed of our greatest worthies, Sir Benjamin Brodie; for the author of a memoir of that surgeon thought it a high compliment to state that his practice was eminently "conservative." Even now I know of no instance better illustrative of the subject than that which I described from Sir Benjamin's practice in the paper alluded to. The memorable instance in which he amputated a leg for incurable pain in the tibia is one of the beacon lights of surgery never to be forgotten. It was, if I mistake not, the model case on which all our modern ideas about abscess of bone are founded, and the pathological examination of that limb led to a line of practice of inestimable value, which, even at the present day, is, I imagine, scarcely appreciated at its full worth. Brodie saw that intolerable pain had been caused by a deep-seated abscess in the tibia, where the matter could find no escape. In the next case of the kind which came under his notice, he bored an opening in the side of the bone, gave exit to the matter, and so relieved the patient of pain; and, whilst curing his malady, saved the limb from amputation. The example has been followed again and again with great advantage; and I repeat that I know not, even now, a better illustration of conservatism in the whole range of practical surgery. The operation was scarcely known when I began the profession, and I confess that it was not until I had been many years in practice that I appreciated its value, and, in particular, saw to what it was in a manner the key. It led me to reflect on other instances where local operations had, or might have, sufficed for the sweeping mutilation of amputation; and I threw together a number of examples wherein, after removal of parts locally, and even extensively, useful limbs had been retained, and thus I felt that the so-called opprobrium of surgery—amputation—had in these cases been successfully set aside. As years have rolled on, this line of practice has been gradually developed into a kind of system, and many modern surgeons are more proud of the number of members or limbs they can refer to as saved in this way than others are of the comparatively commonplace operation of amputation. Let me say, in extenuation of this expression, that no one can more thoroughly appreciate a well-performed amputation than I do; but I certainly appreciate more highly the operation which sets aside the necessity for that mutilation.

Since my views on conservative surgery were first disseminated, I have observed with regret that some have alluded to the term without having a proper appreciation of its meaning. To treat a fracture in the ordinary way, to cure an ulcer, to deal successfully with a chancre with or without mercury, have been alluded to as examples of this sort of practice. Surgery is emphatically preservative or conservative in such cases; but the phrase was coined and used as applicable to a line of practice whereby the loss of a limb might be averted, and the meanest act of surgery—namely, amputating for seemingly incurable local disease—might be superseded by more perfect adaptation of surgical science and art. I certainly should not presume to address you on this subject were it not that I have a strong conviction that surgery has made great strides of improvement in this direction within the period of time to which these lectures are chiefly confined.

Again, I repeat that this kind of practice cannot be considered new. Every saving act of surgery may be so denominated. But the phrase in modern times has a peculiar significance; for it is meant to show that instead of the sweeping and radical measure of total separation or amputation, a compromise may be made, whereby the original constitution and frame, as from the Maker's hand, may be kept as nearly as possible in its normal condition. When Hunter tied the superficial femoral artery for popliteal aneurism, he did a great act of conservatism. Here are his very words. In referring to amputation for aneurism in the ham, and to the old operation which Pott objected to owing to the state of the artery near the disease, "*Why not tie it up higher in the sound parts, where it is tied in amputation, and preserve the limb?*"* His object was to avoid amputation; and he then initiated a long and successful career in that direction. It was a vast idea and a vast triumph for the time.

But instead of thus in a manner reiterating, let me rather bring forward modern illustrations of conservatism to show the sense in which I wish the term used.

At first sight it may appear that, in dealing with tumours, when the knife is applied there is no room for such practice; yet even here I believe it to be peculiarly applicable. There is a poetic fallacy regarding the skilful surgeon who boldly cuts beyond the seat of disease, by way of making sure of its eradication, which should have no consideration with the good pathologist. Whilst doubtless this maxim is safe in cancers, I believe it to be fraught with great mischief in most other cases, and some of the finest things in modern surgery are done seemingly in the very midst of disease. As illustrative of this, I may refer to excisions of joints. A feature of these operations is, that they are done in such locality. Here we see the difference between ancient theory and modern fact. There is no need in such instances of making sure that all the incisions are beyond disease; the articular surfaces, possibly some portions of the ends of the bones, are the really incurable parts; and if these are once removed, the surrounding swelling, which to the eye of the ignorant will appear as the chief disease, will soon diminish, and ere long pass away. Yet what monstrous mistakes have been made on this very point! Limbs have not only been amputated, but amputation has been performed far higher than needful, because of the mistaken idea that the knife must sweep beyond all semblance of disease. It may seem strange to many here that I should refer to such a subject, for they will say, Who can be ignorant about it? who has not seen the elbow-joint taken out from the midst of great swelling? But there are many who have not yet seen even the elbow taken out, and many who imagine that great surrounding swelling is a bar to such an operation. Here (fig. 5) is the cast of an arm on which one of the earliest

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* Lectures by Palmer.

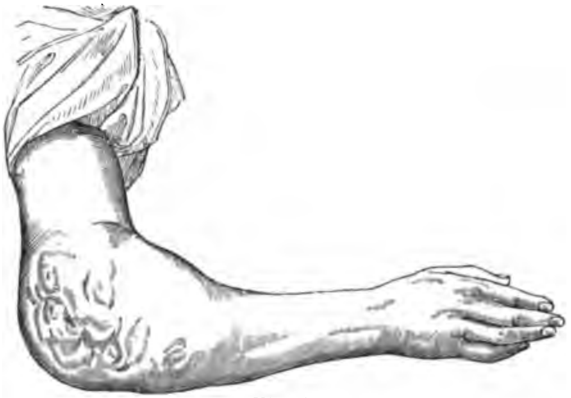


Fig. 5.

excisions of the elbow in London was performed: I say this advisedly, for twenty years ago the operation had not been performed a dozen times in this metropolis. The excision was done in public, and many of the onlookers were amazed at the seeming folly of the practice. Only the articular extremities of the bones were taken away. Immediately after the operation the swelling seemed well-nigh as great as ever; yet see from this other cast (fig. 6) what a change took place in a few months. I believe that there are few doubts now on this subject as regards this individual locality; yet how many will admit, how many will deny, the doctrine as applicable elsewhere? Are there six surgeons in England who have amputated at the knee for white swelling? Is the scrofulous swelling round the diseased ankle, are the foul ulcers and sinuses in such swelling, not, even yet, considered as serious, ay, insuperable, objections to amputation at that joint? and has it not been proved

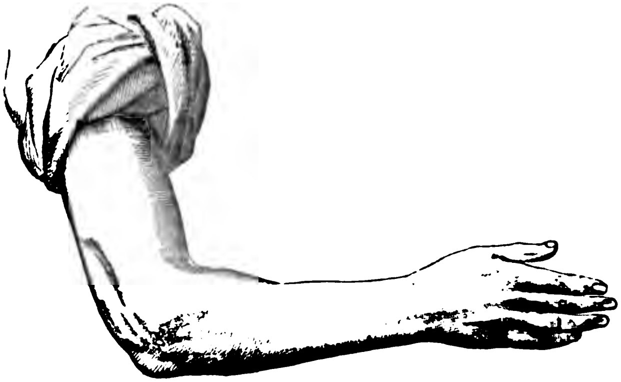


Fig. 6.

beyond doubt that the sinuses and ulcers close, and the swelling subsides, soon after the diseased articular surfaces are removed?

In the removal of tumours which are prominent on the surface, it is a common practice to include an elliptical portion of the skin. Now, excepting in instances of cancer where this texture is involved, and a few rare exceptions, I consider this to be a great error. For cysts on the scalp of or above the size of a walnut, this practice may be said to be the rule; yet the loose bag of scalp, if one is left, will very speedily contract to its natural dimensions, while when an ellipse is taken away there is apt to remain a broad, white, bald cicatrix. In removing an enlarged testis, the custom is to take away a portion of skin too; yet the scrotum is so contractile, that soon after, although only a slit be made in the skin, it will appear less voluminous than on the untouched side. The contraction of the skin in this locality is well exemplified in instances of large hydrocele where, after the radical cure, the scrotum soon assumes its normal size. It is seldom, indeed, that I remove any portion of the skin when it is merely stretched and attenuated over the disease.

But here is an example to show the disadvantage of taking away a portion of merely overstretched skin. This large tumour (fig. 7) was removed by Mr Liston in the Royal Infirmary of Edinburgh, shortly before he left that city for London; and in all my experience I think I never saw a more brilliant operation. Such a proceeding was then both novel and rare, and to the present time it is the largest growth of the kind in this locality that I have ever met with. A few minutes sufficed for the operation, and the patient made a rapid recovery. But mark the history in this respect! The mouth was so drawn to one side, and the skin seemed so overstretched, that the operator was induced to take away an oblong strip, about an inch or more in breadth,

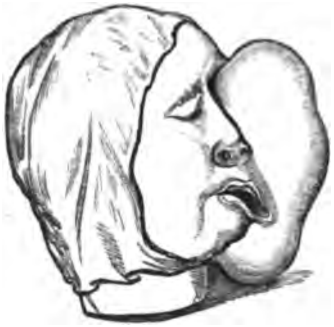


Fig. 7.

from the mouth to the temple or zygoma. The sides of the wound, from the angle of the mouth upwards, came nicely together at the time; but the skin contracted rapidly to its normal state, and union did not take place. At last there was left a large gap (fig. 8), extending from near the angle of the mouth up the cheek to the temporal region, eyelid, and side of the nose, which exposed the tongue and lower part of the mouth; and the poor woman, although relieved of the tumour, was disfigured grievously for life. By the kindness of Mr Nasmyth of Edinburgh, I am enabled to show these illustrations. That gentleman, by ingenious mechanism, contrived to fill up this gap, and improve the poor woman's appearance materially.

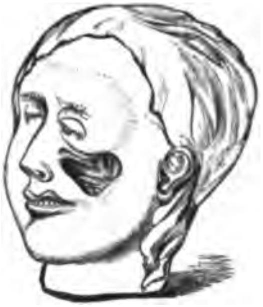


Fig. 8.

When a part of the body is dead or incurably diseased, and must of necessity be removed, I am of opinion that conservative surgery may be displayed in a variety of ways. The examples already quoted of caries, of necrosis, of diseased joints, and as regards overstretched skin, are so palpable that few will object to their being thus characterised. Operations on tumours of the jaws may be said to be performed to relieve distress, to obviate deformity, and to give future comfort and immunity from further disease. A feature insisted upon by Professor Lizars with regard to operations on the upper jaw was, that the whole maxilla should be removed. Now, further experience has shown that in many instances no such extensive measure is required. The removal of the actual disease, wherever it may be, is all that is essential in such instances, provided the tumour is not malignant, for then even the removal of the whole bone is a questionable step. In these operations we can have conservatism as regards preservation of parts and preservation of appearance, of both of which I hope to give you proof as we proceed with these lectures.

In operations on the lower jaw, conservatism may be, and is, displayed in a manner to which few give much heed. But I beg your particular attention to this fact, that tumours of great size have been removed from this bone. The whole of one side thus implicated has been cut away by incisions across the bone, and the portion left has remained healthy throughout life. I have myself taken away by a horizontal incision as much of the alveolar margin of this bone as contained ten teeth, yet there was no return of the tumour for which the operation had been performed. In the last of these proceedings there was conservatism in not interfering with the base of the bone, and thereby preserving the face or chin from considerable deformity. In the first there was the like display in not taking away more than was necessary. How few have reckoned on the value of cases like these, as showing that in tumours of osseous tissue it is not necessary to remove the whole bone! Yet such a doctrine of destruction has got strangely and, in my opinion, alarmingly prevalent. If a tumour shows in the tibia, even at its lower end, supposing amputation to be decided on, there are many who maintain that the operation must be performed in the thigh; for if any of the bone be left it would be sure to be the seat of a return of disease. The same doctrine is applied to the femur and to every long bone; yet there are no just grounds for such a doctrine. Besides the instances to the contrary which I have already given, I may say that when disease does return after amputation for such tumour, it is seldom in the bone, but most generally in the soft parts, and often, too, at a considerable distance from the original seat of disease. It is implied that there is a peculiar circulation in a long bone, whereby, if disease be removed by amputating one end only, the vessels will be sure ere long to work in a similar manner in the end that is left. Now, as your Professor of Human Anatomy and Surgery, I protest against this doctrine. There is positively nothing in anatomy to support it, and I can hardly admit a single instance in pathology; for where disease has shown itself in bone after excision or amputation, I am more disposed to think that there has been some of the original malady left, than that the vessels in the remaining part have imitated the action of those concerned in the development of the original tumour.

But time warns me that I cannot dwell much longer on such topics at present. Suffice it to say, that modern surgery has given us plenty of instances to show that tumours may be taken from bones, involving the whole thickness thereof, so as to admit of the preservation of a useful limb, and where disease has not returned.

As examples of conservative surgery, I may name the varied cunning operations performed on the fingers and portions of the hand to keep that important organ as entire as possible. On the foot there are many of a similar character. The partial operations on the tarsus by scooping out portions or removing whole bones, such as the cuboid or calcaneum, are pleasing examples of this style of surgery. Possibly in these days we have rather overlooked the vast merit of Hey's and Chopart's amputations; and who can doubt the conservatism and the advantages of amputation at the ankle by Syme's method or that of Pirogoff, compared with the palpable mutilation of amputation in the leg?

But should there yet be doubt about what I mean by conservative surgery, let me, in concluding this lecture, give you some further illustrations.

Mott, Warren, Syme, and others, have removed portions, even the whole, of the clavicle, still preserving a useful extremity; and as farther illustrations of the practice of removing portions of diseased bone with good effect, I may refer to the instances recorded by Travers, Luke, South, and others, of partial operations on the scapula. Here is a tumour nearly the size of a fist, which involved the lower angle of the scapula, in removing which I sawed the bone across. Two years have nearly elapsed, and there is no appearance of return. Mr Liston, in 1819, removed three-fourths of the scapula for a vascular growth. The disease did return in the bone in this instance, but the operator could get no one to sanction the removal of the whole bone "with the arm and half of the clavicle," although there was a kind of precedent for this in the instance in which Mr Cumming, in 1808, amputated the upper extremity at the shoulder-joint, and removed the scapula immediately after.

The project of removing the entire scapula and leaving the rest of the upper extremity was happily realised by Mr Syme in October 1856. The patient, about seventy years old, survived nearly two months—sufficiently long to encourage good hopes for future cases. In May 1858, Mr Jones of Jersey performed a similar operation. The whole scapula was removed, and the limb was preserved. Six years have now elapsed, and the patient lives, in excellent health, with a useful limb. Here is a sketch (fig. 9) of her figure, from a photograph recently taken.

In November 1860 Mr Syme removed the head of the right humerus for a tumour, with the view of avoiding amputation at the shoulder-joint,—which, in fact, would be required if the growth were allowed to increase. A year afterwards some indications of further disease were evinced "on the upper and back part of the shoulder," and so alarming did the symptoms appear that he recommended the removal of the scapula and arm at the same time. The patient at first declined such an operation, but was not long in submitting to whatever the surgeon might think best. The happy idea struck Mr Syme that he might remove the scapula by itself, as with the former patient. In November 1862 the scapula, with a portion of the clavicle, were removed by that enterprising surgeon, the diseased mass weighing between four and five pounds; and in January of the present year (1864) Mr Syme reported that this patient remains in perfect health, with a wonderfully useful arm. Here (fig. 10) is his figure, represented as but little distorted, considering the loss of scapula, the upper end of the humerus, and a portion of the clavicle. He is in the act of holding up a heavy chair with the preserved

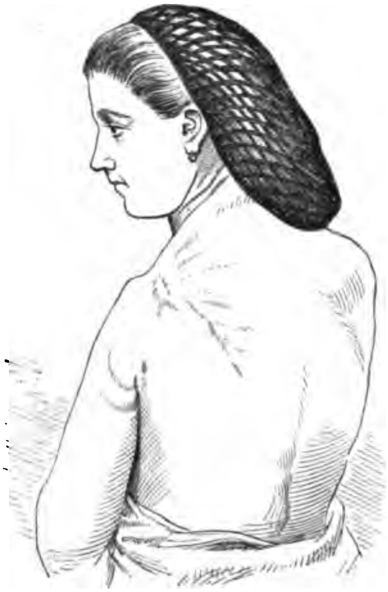


Fig. 9.

limb, to show the vigour still retained. Looking to the fact that this man had already lost the head of the humerus, the case seems to me the *ne plus ultra* of "conservative surgery." Contrast it, I pray you, with those cases of total removal of the scapula and upper extremity recorded by Cumming, Gaetani Bey, M'Lellan, Gilbert, Rigaud, myself, and by Mr Syme. Great though these may be as regards the magnitude of each operation, the cure of disease, and saving of life, I decidedly give the palm to the operations of Syme and Jones. Here (fig. 11) is a sketch of my own case of removal

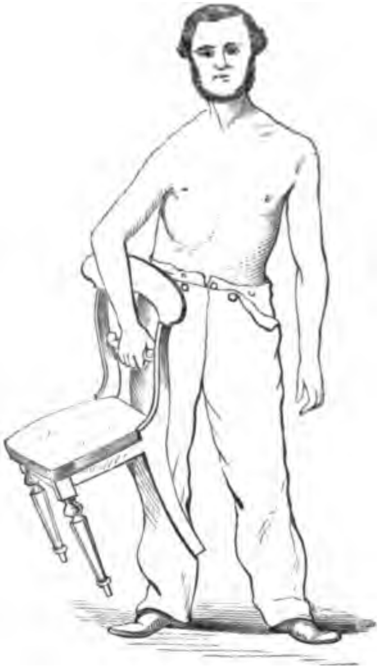


Fig. 10.

of the scapula after the arm had been amputated at the shoulder-joint by some rash hand before. The loss of the arm seems deplorable, and looking at it as having occurred some fifteen years prior to the operations of Syme and Jones, the contrast between these pictures speaks volumes in favour of that progress for which I now plead, and I know of no bolder conservative feats in surgery than those of the two gentlemen just named

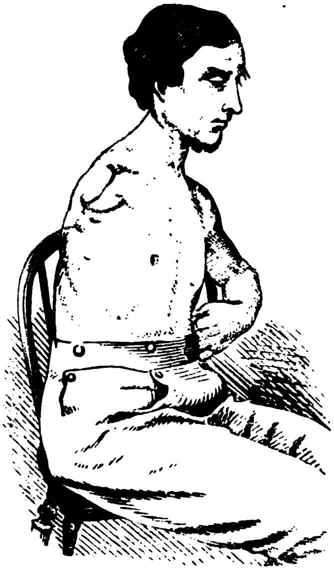


Fig. 11.

Here is the cast of a boy's lower limb (fig. 12), and here is one from another similar case (fig. 13). In each the leg is bent at the knee to a right angle, the knee is swollen, and there are openings and sinuses in all directions. The history of each case told of incurable disease of the knee of several years' standing; the probe indicated an open joint, and, besides bare articular extremities, a great stretch of necrosis of the femur

Fig. 12.

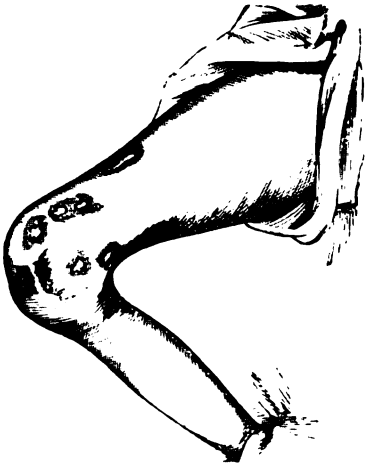
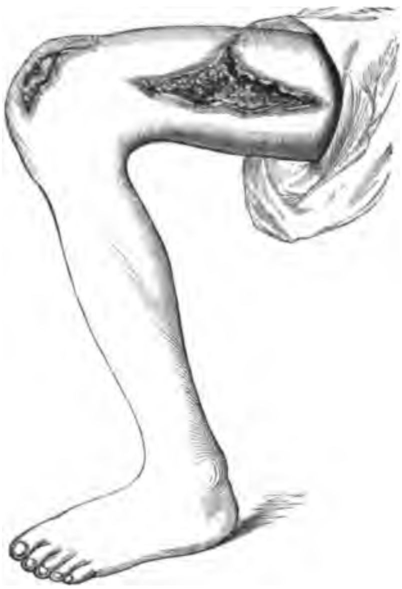


Fig. 13.



extending upwards for inches. The proof of extensive disease, the distortion of the limb, the state of hectic, all indicated the utmost hopelessness excepting from amputation. The leg and foot were sound, as was the greater part of the thigh. Instead of applying the

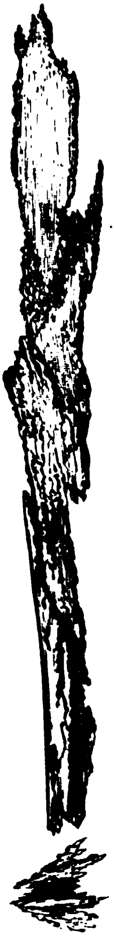


Fig. 14.

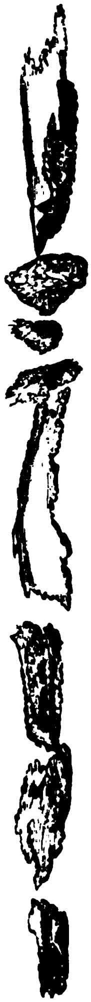


Fig. 15.

amputating knife, local measures were taken. This amount of necrosis of the femur (figs. 14 and 15) was removed from each as a commencement. Soon afterwards the incurable articular surfaces were taken away; in other words, excision of the knee was performed. Here is a cast (fig. 16) of one of these cases afterwards; unfortunately the lad got hip disease subsequently, but you will observe that my limb (the left) is the best; and this is the cast (fig. 17) of the other; but, better still, here is the boy himself, with the leg that was preserved. He can stand upon it for hours, and walk miles daily. Of all my feats of conservatism, I know of none of which I am prouder.

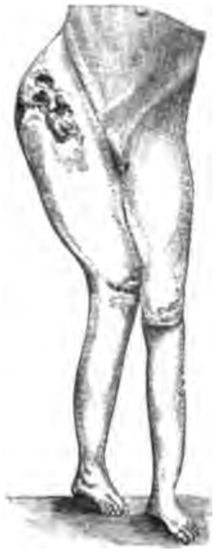


Fig. 16.

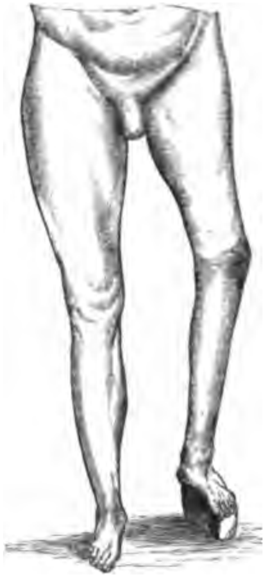


Fig. 17.

LECTURE III.

ON HARE-LIP AND SPLIT PALATE.

MR PRESIDENT AND GENTLEMEN,—My first formal operation in surgery was for hare-lip in the year 1828. The patient was a youth, seven years old, and, as expected, the result was satisfactory. The gap in the lip was complicated with one in the palate. For thirty-six years at least, then, my attention has been given more or less zealously to these subjects, and from what I have observed during that considerable period, I fancy that my experience has been on both as much as that of most men in this country. During that time I have seen many hundreds of both kinds of cases; and being about to frame a lecture for the present occasion, the question naturally arises, Have I anything new to say? I have, in a manner, exhausted the subject, as far as my knowledge goes, in my clinical teaching; but as a number of years have elapsed since I published either cases or observations, I believe that I cannot do better than refer to them both; and whilst recapitulating some principal points, bring forward such others as may to you appear in some degree novel.

To begin with hare-lip, I may state that there is no such resemblance to the lower animal in the human subject. The fissure in that animal, as represented in fig. 18, is invariably in the mesial line; in man it never is. Of the many which I have seen, I have never met with an instance of the kind. Whether there has been one or two—a single or a double fissure—the defect has always been on one side or both; and when it has extended to the alveolar ridge, it has also appeared in one side or both, whilst the mesial line, both in bones and soft parts, has been in a manner perfect.

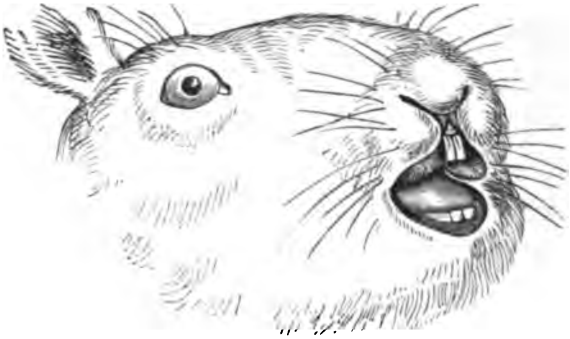


Fig. 18.

There is great variety as regards the mesial part of the lip. Often it is slender in all dimensions, and does not extend to the prolabium or free margin. In other instances it is of fuller dimensions in all respects. In many examples of double fissure the central portions are apparently thrust forward, and seem of extraordinary development; but these features, as also the flat alæ and expanded nostrils, I am inclined to attribute chiefly to defective bulk in the lateral portions of the alveoli. I have no doubt that an erroneous impression has sometimes arisen in this way. Here (fig. 19) is a likeness after an operation for hare-lip, showing the cicatrix exactly in the mesial line, and with some this might appear as a direct refutation of what I have stated; but here (fig. 20) is the face before an operation was performed, and the gap was large on both sides. It was as marked

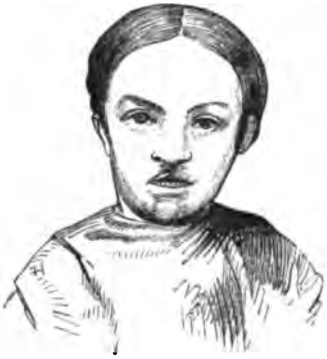


Fig. 19.

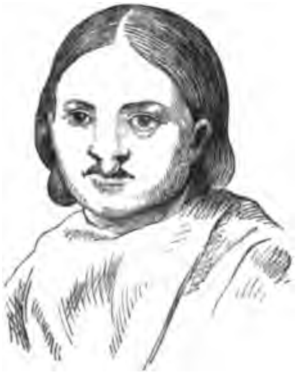


Fig. 20.

an instance of cleft under each nostril as could be, and in the operation the middle projection of bone was taken away, whilst the mesial portion of lip was used chiefly to form a columna for the nose. The result is, as you may perceive in fig. 19, a cicatrix exactly in the mesial line, of which fig. 21 is another illustration; and thus, I imagine, a most glaring example of the lateral fissures has been supposed to be a positive proof of defect in the mesial line. I repeat that I have never seen an instance of the kind, whilst I have seen some rare examples of fissure in the face elsewhere, such as in the eyelids, cheeks, and lower lip. In the cheek I have seen a congenital fissure extend from the angle of the mouth to the malar bone; and in another instance (fig. 22), from the angle of the mouth outwards towards the angle of the jaw. In one rare example I have seen a congenital gap in the lower lip extending from near the left angle of the mouth to

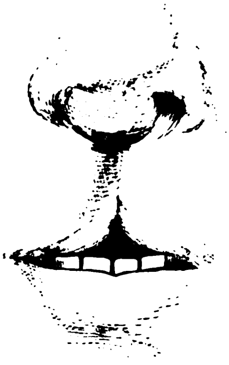


Fig. 21.

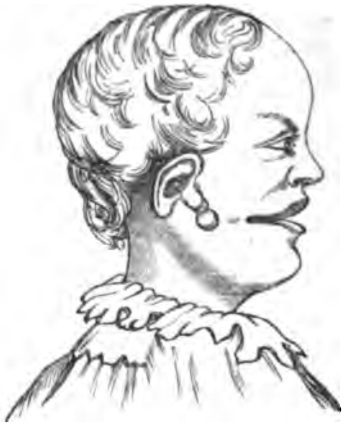


Fig. 22.

the base of the lower jaw (fig. 23). It is the only instance of such congenital malformation that I have seen. As you may perceive, it was amenable to operation, and the gap was accordingly closed.

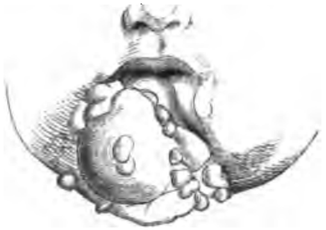


Fig. 23.

In the worst cases of this malformation, where there is fissure through the alveoli as well as the lips, the central portion usually presents difficulties to the satisfactory accomplishment of an operation, and it has often been a nice question, What should be done either as to retaining or removing the part? In some rare cases there is no protusion beyond the ordinary line, but in the majority, even if there be only a single gap, there is a projection forwards (as in figs. 20 and 25), which may seriously impede the just approximation of the edges at, or soon after, an operation. Before deciding such a question, it might seem highly advisable to know what this part really is, and what may be its apparent importance. The most striking way in which I can bring the subject before you is to take the example of double fissure in the alveoli. Now, whether the central part projects forward or not, there is a round knob (as in figs. 24 and 25) like the tip of a finger or thumb, according to age, which is familiarly known as the intermaxillary portion, bone or bones; and while it has usually been referred to as single, it has also been spoken of as analogous to the premaxillary bones in animals of a lower grade. Some foreign histologists, as Von Ammon and Vrolik, have displayed great research on this subject; but I know of no more minute anatomy in the English language than that in my own work on Surgery. There it was shown that this projection (fig. 26) consisted of two portions of bone joining in the middle under the columna nasi, as in the normal junction of the superior maxilla. The first specimens which I had of this were procured by clipping the projection off during the operation, at its narrow neck above, in the line of the vomer. I have subsequently examined more entire specimens procured from the dead body, and found that the united portions forming the projection extend upwards and backwards by a narrow neck until they join by a kind of symphysis with the lower and front end of the vomer. Fig. 27 shows the vomer and intermaxillary

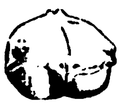


Fig. 24.

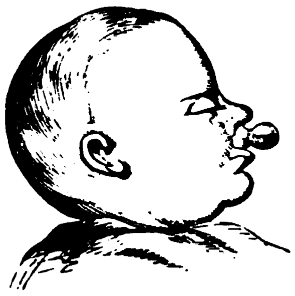


Fig. 25.

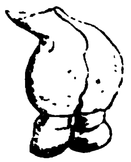


Fig. 26.

portions by themselves. Fig. 28 (*a*) shows them in the fœtal skull; in this instance much twisted to the left by natural formation. This junction is so far behind the line where the operator would cut the neck of the projection, that it cannot be appreciated excepting in such a specimen as this.

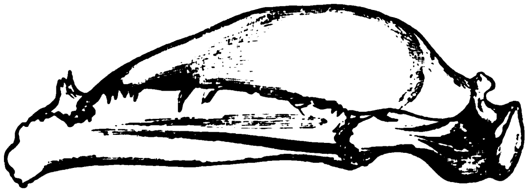


Fig. 27.

When the palate is split, as it very generally is in the double fissure through the alveoli, the vomer sometimes has its only support below in the intermaxillary projection; or, rather, the projection seems to be an appendage to the vomer, for it appears to be supported in its position by that bone, and by the cartilaginous, fibrous, and mucous tissues associated with the septum. The dark line in the middle of fig. 29 shows the lower margin of the vomer in a cleft palate, and

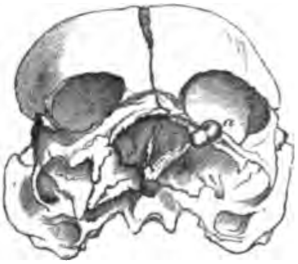


Fig 28.

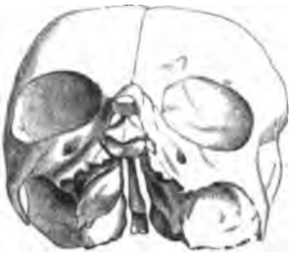


Fig. 29.

the large proportionate size of the intermaxillary knob cannot escape observation. Even in the youngest fœtal human upper jaw it is difficult to detect the distinction between the intermaxillary portions—equivalent to the premaxillary bones in the lower animals—and the lateral or true portions of this bone; but, curiously, whilst no line of the kind can be traced in the well-developed fœtal skull in the front part of the alveolar ridge, the suture remains tolerably distinct in the palatine portion of this bone until a late period of adult life. Here is the line of that distinction; and when there is a malformation or defect of the alveoli in single or double hare-lip it is invariably in this line. In the central portion the two front incisors, deciduous and permanent, are, each at the proper time, usually tolerably perfect. The additional incisor on each side, deciduous and permanent, is generally of imperfect development, or altogether wanting, and instead of projecting downwards, usually slopes outwards into the

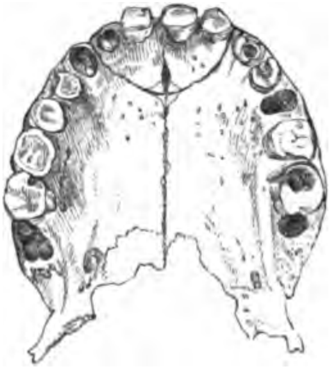


Fig. 30.

fissure. When present, it is often shed at an early period, from decay in its substance, or by actually falling out entire. The canine or eye-tooth generally makes a fair show, and is of tolerable use, although it projects inwards, and is rarely to be compared with the normal tooth, or, I might say, the same tooth in the normal jaw.

This intermaxillary portion may be looked upon, practically, as one mass in the deformity now under consideration. It may vary in size—breadth and thickness,—and also as regards its prominence, but it is always found in the skeleton as I have represented.

When there is only one fissure in the alveoli, the mesial portion on that side has often a tendency to project forwards, so as to endanger the success of the operation for the remedy of the malformation. In such a case I should consider it best to cut the part away. The blade of a scapel can readily be passed into the line of junction in the middle, and the division may be effected with the knife if the subject be young. Here are several specimens of the kind. One (fig. 31) is a half of the knob. Another (fig. 32) is formed of two portions, in an infant; they have been macerated, and are purposely kept asunder. Fig. 33 shows the two portions in an adult, with the central incisors tolerably

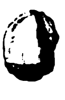


Fig. 31.

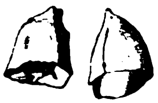


Fig 32.

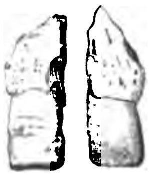


Fig. 33.

perfect. When the fissure is double, it has been proposed to bend the projection back by pressure, or after breaking its narrow neck ; but I have noticed, on trying both plans, that the mass has been an impediment to a very satisfactory operation on the lip, and whilst I do not positively object to the occasional use of either of these plans, I give a decided preference to the removal of the projection altogether. If bent backwards, it will probably be at the damage of the vomer and septum. Whether bent or broken, the teeth will be thrown on a new plane, and will be likely to project backwards. I have recently heard it proposed to cut out a piece of the narrow neck, so as to let the knob fall backwards into a better place; but if this were done, I should doubt if the knob would not die for want of circulation. Of course, if the part can be preserved in its natural position, that will be best; and if there be any slight projection, that will be gradually remedied by the pressure of the lip after the operation. However wide the gaps in such cases, it is remarkable how they close as years roll on; for in many instances the opposite sides approximate so closely that a fissure will almost elude observation. I have never seen a complete osseous closure. Close approximation gives strength to this condition of the upper jaw. In early years, when there is no lateral support, the intermaxillary portion and the central incisors must be of little value as regards prehension, incision, or mastication; for the narrow neck and vomer will give but little stability in such acts. Indeed, in making such preparations as these in the infant head, it is difficult when the parts are moist to keep the projection *in situ.*

As to the causes of this defect, whether in the lip or jaw, I have no explanation to offer. I look upon most of the theories on this subject as proofs of how easily even educated men give a loose rein to the imagination. If this be the case amongst ourselves, it is not to be wondered at that amongst the non-initiated, particularly females and mothers, the influence of the imagination is supposed to be sometimes baneful. When we hear of mothers producing boys or girls at will—a "son and heir," for example, or a daughter when the boys become more numerous than the "governor" may think right — then I shall believe in the influence of the imagination. If I may or dare venture a theory of my own, I am of opinion that the defect arises from the breed, and that it occurs where there is a predisposition in the parents. I fancy that I can detect this in the features of father or mother, or of both.

Regarding the operation itself, my personal experience extends to between 300 and 400 cases. Prior to 1850 I had kept notes of only a few of such cases. At that date I was asked to operate on one which had baffled the best efforts of Mr Liston and Mr Lonsdale, and at the same time to use a spring or truss, to push the sides of the lips forwards—an invention of Mr Hainsby, the father of the child. Fig. 34 gives an illustration of the instrument when in use. The operation proved successful, and I had good reason to be satisfied that the instrument had been efficacious. Since that time I have used a similar appliance in upwards of 250 instances, and consider it far superior to any other means—by straps or otherwise—for drawing the parts together. Particular notes were taken of these cases, some of which are interesting. 146 were males; 153 were on the left side; 53 were double fissure; and no less than 208 were associated with cleft palate. 169 of these have been operated on at King's College Hospital.

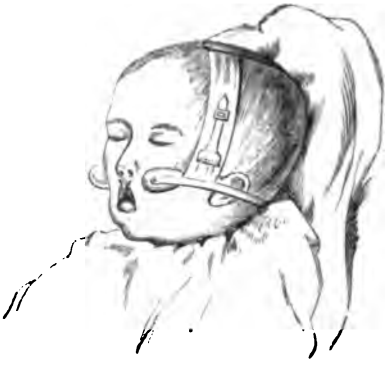


Fig. 34.

As to the results, three of these patients have died, seemingly from the proceeding—not from bleeding or shock, but from some child's ailment supervening, such as thrush or diarrhœa. I have never seen a single instance of convulsions afterwards, at any period of life, and I have operated at all ages between a few days old up to thirty-six years. Taking all things into consideration, I am of opinion that the earlier the operation is performed the better—assuredly before teething. I decidedly prefer about the end of the first month. In a simple case and healthy infant it may be done any time earlier to within a few hours of birth. If the child is weakly and the gap large, particularly if complicated with split palate, I strongly advise delay for some months until additional strength is acquired, and also that the parts may be pushed closer in apposition by the use of the truss referred to. I have sometimes made babies wear this for many weeks or months before, and have always noticed its great value.

In double fissure I have generally operated on both sides at the same time. Occasionally, however, I have taken first one, and then the other, selecting the simplest first, and performing the second operation a few weeks—possibly months—after. In some of these double clefts the middle portion of the lip has been so scrimp that I have used it for the columna, particularly in instances where the nose has been flat. When it has seemed needful or best to take away the mesial projection, the closure of the gaps has always been a very easy matter; but when this part has been prominent, there has often been cause for much anxiety as to the result. The tension of the lip over this part has threatened to be too much for the recent adhesions. In only one instance has there been total failure of union, and in that I afterwards repeated the operation with success. In several cases there has been serious threatening of non-union by the gap opening an hour or two, or a day or two, after the stitches have been removed. In such instances I have scraped the surface, introduced needles again, and put all up as at first, and thus made the process appear only as one. This method I have rarely seen fail. On one occasion a child was running about eight days after a very successful operation for a single fissure. It unfortunately fell on its face, and at once split the union open. Although eight miles off, it was brought to me within a couple of hours, when I introduced fresh needles, and with the ordinary care the result was as perfect as could be desired.

After trying a variety of lines of incisions, and seemingly cunning devices for adaptation of opposite surfaces, so as to give the best possible appearance to the lip, I confess that, with few exceptions, the old-fashioned straight line, from the root of the cleft to the free margin of the lip, appears to me to be the best. If a notch or irregularity is left in the lip, it arises generally, I believe, from too little having been cut away from the margins of the fissure.

To make sure of a good and easy approximation of surfaces, I strongly recommend a free separation of each side of the fissure from the alveoli. Some have said that the frænum on the mesial side in a single fissure should not on any account be cut. It is often unusually large in such cases, and I say, from my experience, that I see no reason why it should not be cut as readily and freely as any other part of the mucous junction of the lip to the jaw.

To take a refined view of a perfect operation, I have myself found the most difficult part to be that of bringing the opposite sides so accurately together that the margin between the mucous membrane and skin should meet on a proper level. This sketch (fig. 35) shows what I mean. Had the margins on both sides been cut off as low down as indicated by these lines, the junction would have appeared more favourable, and, in addition, no notch would have been left on the margin of the lip.

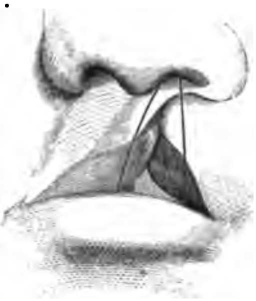


Fig. 35.

The position of patient and surgeon during the operation deserves some notice. I have often seen the operator sit or stand in front of his patient, and, in general, before the work has been finished, his face and dress have been spluttered over with blood, saliva, and mucus. A far better plan is to be behind, or at the side, so that all the annoyance referred to may be avoided. In infancy the head should rest between the surgeon's knees, who should sit; and in the adult the operator may stand behind a chair on which his patient sits, or at the head or side of a table on which his patient is laid. In either of these positions he may escape the unseemly damage to personal appearance to which I refer.

A few of my infantile patients have taken the breast after the operation, but most have been fed by hand, and some modern devices with caoutchouc tubes and bottles have been of great service.

Many of these observations are of no novel character, but possibly the experience which I have had may render them of additional value. It may, perhaps, be thought, that in bringing this minor subject in surgery before you in these lectures, I deal but lightly with my position. You may have noticed that I look upon some of the so-called minor subjects in surgery as being far more important than some imagine; and in extenuation of my present course, I may refer to the circumstance that the illustrious Roux, in writing the experience of forty years of surgical practice, did not disdain this topic, but actually made it the subject of one of his famous letters to "Cher Lawrence," his equally distinguished and experienced contemporary.

Experience in hare-lip naturally implies some experience in cleft palate, and I hope that I am not taking an additional liberty in placing this subject in association with that already referred to. In further apology, I may state that both the surgery and anatomy of cleft palate are entirely of modern date, and within the time to which I have limited the scope of these lectures.

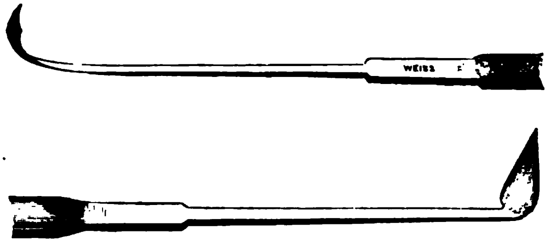
The early history of the operation for cleft palate sounds like a romance. In 1819 a medical student applied to Roux, then one of the surgical luminaries in Paris, with a defect of this kind. Roux pared the edges of the cleft, and brought them together with stitches. Union followed; the palate became like a normal one, and when the youth appeared amongst his former friends, the change in his voice was such that he could scarcely be recognised as the same person.

I doubt if this case, although fairly made public by Dr Stephenson in his inaugural dissertation on Velosynthesis, when taking his degree of M.D. in the University of Edinburgh in 1820, produced the full effect on the surgical mind that it should, even when further elucidated in the famous essay by Roux, published in 1825. Possibly the rarity of the condition and the difficulties of the operation led to apathy, and down to the period of Roux's death no one seems to have had any experience on the subject at all equivalent to his. Like others taking their early surgical lessons in the third decade of the present century, I was attracted by the romance referred to. But I had seen little to absorb special attention. Whilst busy in dissecting-room work, a subject with cleft palate came under notice. At that time, as even now I suppose, few students took the pains to dissect the palate; but it was my fortune to have this one to luxuriate upon. I made a careful dissection of all the muscular apparatus, and came to the conclusion that I had rarely seen it so highly developed, although the palate and throat were small, being those of an aged female. The whole matter fell aside for years. I had performed the operation on the living body, and had heard of others doing so, without success. The subject in a manner slept on this side of the Atlantic, with the exception of the doings of Roux himself; but about 1840 all Europe, in a surgical sense, rang with the brilliancy of Stromeyer's operations for club foot and Dieffenbach's for strabismus. Tenotomy and myotomy became the fashionable surgical mania, and I bethought me of my former dissection of the cleft palate. For anything that I knew, it was original. I compared it with the normal condition, anatomically and physiologically, and then reflected on what I had seen and heard of surgery as applied to this condition by Roux and others. My zeal was further stimulated by a paper by Dr Mason Warren of Boston, which told of a larger proportionate success by Dr Mütter of Philadelphia, and himself, than to my knowledge had yet been attained by any others, not even excepting Roux. On additional reflection, I fancied that I had fallen upon new views in anatomy, physiology, and surgery, and my conclusions were embodied in a paper which was submitted to the Medical and Chirurgical Society of London in December 1844. That paper was honoured with a place in the volume of "Transactions" of the Society for 1845. Its main features went to show how the cleft palate was closed in deglutition by the action of the superior constrictor of the pharynx; how the palato-pharyngei in cleft palate acted differently in this state than in the normal palate, and, instead of closing the opening between the pharynx and the nares, in reality tended to draw the parts asunder—an act which was overbalanced by the vigour of the upper constrictors of the pharynx. Above all, looking to the surgical aspect of the malformation, I gave it as my opinion that the action of the levatores palati probably exercised such an influence on the lateral portions of the palate, after the operation of Roux, as to mar its good intentions. I showed, in as far as one could by reference to the dead and living parts, how the levator muscle on each side had such free and uncontrolled action that, whenever excited, it drew the margin of the cleft outwards and upwards, and so tugged upon the stitches put in by the surgeon that ulceration in their sites and separation of the junction was a most probable result—that, indeed, which had caused the failure of Roux's operation in so many instances.

The inferences which I drew were, that if the palato-glossus, palato-pharyngeus, and levator palati on each side were divided, the soft flaps would thereafter, for a time, be so relaxed that in all probability the mesial line of adaptation would be so little disturbed that union would take place. The tensor palati I considered would have little disturbing influence, nor did I put much importance on that of the palato-glossus. My impression was, that the action of the levator palati and palato-pharyngeus, particularly that part in the posterior pillar of the fauces, was likely to prove detrimental; and, in accordance with the somewhat novel and already popular practice of myotomy and tenotomy in other directions, I recommended division of these muscles as an adjunct to the ordinary operation for cleft palate.

By modern custom, the department of anatomy associated with the professorship of surgery in this College has been held of comparatively little account, although both my predecessors have displayed remarkable acquirements in this direction, which they have turned to great account in the field of surgery. As professor of human anatomy, I hope that I may not be out of order in claiming to be the first who solved the problem of how the cleft in the soft palate is closed during deglutition. The drawing influence of muscle has been most recognised; the pushing has been less taken into account, although it is very considerable. Swallowing, the vermicular action of the intestines, and defecation, are notable examples of this force, just as palpable in the estimation of the anatomist as the drawing of the biceps in flexing the arm. Anatomy without physiology would be in a manner senseless, but when joined together they give life and soul to surgery. The influence of the constrictor muscles of the pharynx in the process of deglutition was well known to physiologists; but how, during that process, the gap of the cleft palate was closed in vacant space was an enigma, until I had the good fortune to show that the parts are pushed together by the action of the superior constrictor particularly, so that the gap between the pharynx and the nostril is as completely closed during deglutition as if the velum were entire. Then, for the surgical aspect of the investigation, I showed that by temporarily taking off the influence of such muscles as in common action tended to draw the two portions of the soft palate aside, there was a probability of such entire rest that union in the central line was most likely to take place—certainly, at any rate, more likely than with these muscles in full vigour, irritated, too, as they might be by the wounds, by inflammation, and by the presence of stitches. The almost intolerable distress, the depressing influence, the actual danger, associated with the injunction against swallowing laid down by Roux and others, made the early operations of this kind examples of human endurance which few could follow out to the full extent. Such injunctions had been occasionally disregarded, and Sir Philip Crampton gave some notable examples of this kind. Since I showed, anatomically and physiologically, that during deglutition the parts are actually pushed together, that process is no longer forbidden; and now a fair share of suitable nourishment is freely administered—a matter of great consequence as regards successful issue.

With a single exception, which shall be nameless on such an occasion as this, I am not aware that any anatomist or surgeon of repute has controverted my views as expressed in the paper referred to. Nor need I do more than advert to the amiable and flattering device of a continental admirer bringing them all out anew, a few years after, as if they were his own. I have heard of nothing yet to impugn the anatomical explanation which I first gave of how various haphazard incisions might or might not facilitate the approximation and adhesion of the margins of the cleft in the soft palate. The knife for dividing the levator palati was my own device, and it was proposed at the same time, and soon subsequently applied, for the purpose of separating the soft palate from the hard in cases where there seemed a probability of closing a cleft in the hard palate, as well as the soft. Here are (figs. 36 and 37) the very instruments which were first made for these purposes, and used by my own hands.



Figs. 86 and 87.

Those who have devoted attention to cleft palate during the last twenty years must have been surprised at a recent dispute as to priority in separating the soft from the hard palate, with a view to close the cleft in the hard. Dr Mason Warren described this process in 1843;* and it was referred to in my original paper. I myself performed it in January 1845, and have since repeated it on all fitting occasions. The late Mr Avery devoted special attention to this portion of the palate; and after his death the subject was further ably developed by Mr Pollock in a paper published in the Medico-Chirurgical "Transactions" for 1856. The first idea that I had of this portion of the operation for cleft palate was obtained from Dr Mason Warren. I deem it but fair to the reputation of that distinguished surgeon to state that I know of no originality before his, and that I look upon all modern claims to such originality as arising either from ignorance or a desire

* New England Quarterly Journal of Medicine and Surgery. April 1843.

to rob the fair reputation of a name which, in son as in father, will stand for generations among the brightest in surgery.

Although working at the subject of cleft palate since the date of my first paper, I cannot pretend to add much that is novel to the views which were then expressed. I have little to add, little to detract, from the anatomy and physiology which I ventured to submit as original. I am still as much convinced that the tensor palati has little or no influence on the soft palate—certainly that it has none to counteract the closing of the cleft. The palato-glossus, I am of opinion, has no practical influence; and, excepting in rare instances, I am convinced from experience that there is no necessity to interfere with the palato-pharyngeus in the posterior pillar. I am equally convinced of the value of dividing the levator palati, for that is the muscle which, by drawing upwards and outwards, separates the edges so as to prevent union or break it up when the stitches are removed.

There is ample experience to show that union has taken place, despite muscular action to the contrary. The experience of Roux and others has proved that. But I know of no experience equal to my own to prove what I contend for—namely, that by taking off muscular action for a time union can be rendered more certain than by leaving the muscles untouched.

Since I entertained the views referred to, I have operated on 134 cases, and of these 129 have been successful. In two union failed entirely, and in three it was so partial and imperfect that I place them as unsuccessful. Forty-five of them have been performed in hospital practice. In a considerable number an aperture has been left in the hard palate, and much benefit has been derived in many such cases from the use of an obturator. Occasionally there is a round aperture left, with such scanty material that it cannot be closed by operation; but in such slits as these (figs. 38 and 39), if the roof be wedge-shaped (not horizontal), the soft parts may be separated from the hard, and brought down so as to approximate in the middle, and be held together by stitches until they unite.

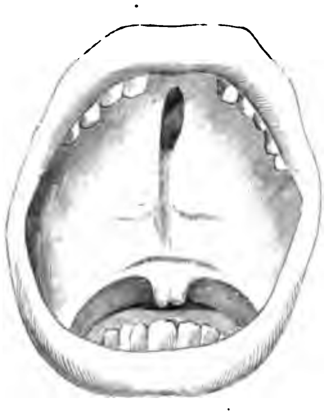


Fig. 38.

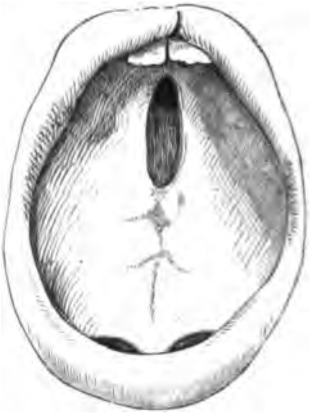


Fig. 39.

Fig. 40 gives a specimen of cleft through the soft, and a small portion of the hard palate; and fig. 41 shows the line of union a fortnight after operation. Fig. 42 shows the cleft in soft and hard palate before operation. Fig. 38, already referred to, shows the result of operation. Fig. 43 shows a nearly similar condition to fig. 42, and fig. 39 illustrates the result in this instance.

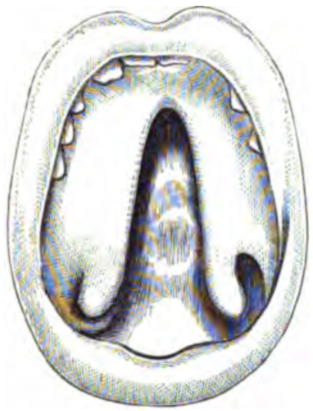


Fig. 40.

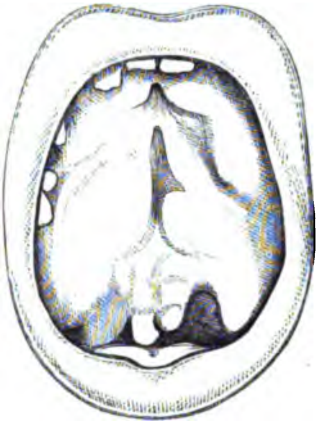


Fig. 41.

I have never attempted the operation in infancy, and consider the circumstances most favourable at or above

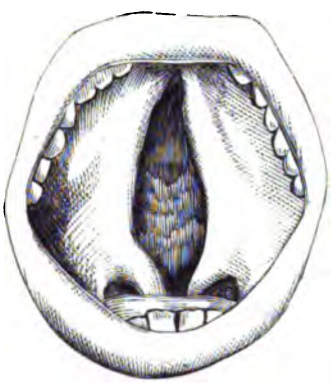


Fig. 42.

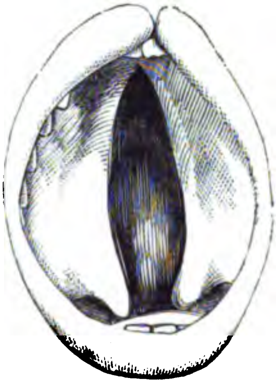


Fig. 43.

puberty; but I have frequently operated successfully at ages between ten and fifteen, where patients have been steady and courageous. I have never operated under chloroform: and, whilst I do not deny the possibility of doing so, I am of opinion that, as a rule, it is absolutely requisite to have the patient conscious, so that he may facilitate the steps in a variety of ways.

This enumeration includes all kinds of cases, and refers chiefly to the cleft in the soft palate. In many instances of cleft in the hard palate it is utterly impossible to contend against nature; and even in the soft, the parts are occasionally so scanty that there is literally no material to work upon.

In as far as I know, the greatest success recorded before my own views were made public was that achieved by Mütter of Philadelphia. In 1843 he had operated successfully on nineteen out of twenty-one cases; and J. Mason Warren of Boston had been successful in thirteen out of fourteen cases. These instances were of both hard and soft palate. What may have been their after success I cannot say. It has been related of Roux, since his death, that he had operated on 120 cases, and that of these one in every three had failed. I attribute Roux's comparative want of success to the circumstance that the levator palati and back part of the palato-pharyngeus were left untouched; and I consider that Warren's success may have resulted from the free incisions which he made through the palate outside the pillars of the fauces. My own success, if I may so call it, I attribute chiefly to the division of the levator palati, and next to the relaxation which the wound for that division involves. For mere relaxation, the incision of Dieffenbach is probably the most perfect. I know that it has been particularly successful in Mr Skey's hands, and in Mr Pollock's; but, with all deference, I am still disposed, from all I know of the subject, to prefer a free incision above the soft palate, whereby the levator palati may be divided to a certainty. In addition, I look upon this wound as of great service in this respect—the lymph effused upon it acts as a splint, whereby the palate is kept fixed as a board until union in the mesial line is complete.

As to attitudes in this operation, the patient may sit or lie, as may best suit convenience. Latterly, I have made most use of the recumbent. I find that the head can be kept best on the same line in this position; and as regards my own views on the anatomy and physiology of the parts concerned, I deem the subject of some importance. For instance, if the patient sits with the head slightly thrown backwards, the palato-pharyngei, when irritated, pull the soft palate downwards towards the epiglottis, so as to leave a space between the palate and the base of the cranium; but if the head be thrown far backwards the axis of action is altered, and these muscles draw the soft parts upwards, or, in other words, bring the soft palate towards the base of the cranium, and thus add to the difficulties of the surgeon by limiting the space above the soft palate where he has to work with the needles in introducing sutures. Here, as in hare-lip, the surgeon has generally stood before his patient, but I invariably select his right side in preference to all other places.

The grand practical object of this operation is to improve the voice and articulation. Defective deglutition from this malformation is what attracts the mother's or nurse's attention in early life. The cries of infancy are in nowise peculiar in tone; but when definite articulation commences, or rather should commence, the value of an entire palate is then appreciated. The air and sound, in passing outwards from the larynx, escape in part through the nostrils by the split in the palate. A nasal twang is the result, and articulation as in the normal state of the parts is impossible.

Immediately after the operation, the modification on the voice can be at once detected. It is customary to keep those operated on from speaking for eight to ten days. It is, however, a needless restriction as regards my operation. In reality, few care, under the circumstances, to speak at all; yet I do not think that it would do harm. In the course of eight or ten days, when the fever or distress following the operation has gone, the tone of the voice is at once perceived to be changed for the better. Improved articulation, however, comes more slowly. Years, many years, are required for distinct articulation when the whole organs are to all appearance in perfection; and after the most successful operation for cleft palate, months and years are required to alter defective sounds. Voice and speech have to be modified anew. With some the changes come slowly and sluggishly; but with others they are so rapid and perfect that in a few years the original defect cannot be detected except by a practised ear.

LECTURE IV.

ON LITHOTOMY IN CHILDREN AND ON LITHOTRITY.

MR PRESIDENT AND GENTLEMEN,—Much of the interest associated with lithotomy has reference to the operation on the adult. It appears to me that the difficulties and dangers of this operation have been estimated more from the results than from the actual process. Hence, as lithotomy is known to be comparatively safe when performed on subjects at any age prior to puberty, it has been deemed equally easy in performance; and a widespread notion prevails that in children it is so readily effected that comparatively little study, thought, or care has been bestowed upon it.

My own experience has led me to imagine that surgeons have treated this subject too lightly; and, at the risk of being thought to have entered on ground already thoroughly explored, I shall venture to step freshly upon it, with the conviction that, although I may state nothing which is not already well known to experienced lithotomists, I may do much good for beginners by directing attention to certain points which have heretofore been scarcely, if at all, referred to by clinical teachers or surgical authors.

It has been computed that about a third of those on whom lithotomy has been performed have been under the age of puberty, and the average mortality in such cases is about 1 in 30. Comparing this result with that of the operation on the adult, the measure of success is large indeed; and hence, doubtless, has arisen the common impression that the mechanical process in the young is simple in all respects. I am firmly convinced, however, that a great mistake prevails on this point, and that as much care and skill are required on the part of the surgeon in operating on young subjects as on adults; I should say, even more; for in my personal experience I have often felt more doubtful during the steps of the proceeding upon children than when dealing with the full-grown man.

The history of lithotomy shows clearly that when the operation is satisfactorily accomplished in children, its success is almost certain. Yet we often hear of difficulties and great mishaps in young subjects, and, in particular, we often hear of the operation being abandoned for a time, or of the cutting having been performed when a stone has in reality not been found. If these matters had been more referred to heretofore by authors, operators, and teachers, we should, I imagine, have heard more of the difficulties and fatality of lithotomy in young subjects than some people think of; at any rate, a more wholesome idea would have prevailed regarding the subject than, in my opinion, prevails at the present time.

These remarks have been suggested by what I have seen, read, and heard of in the practice of others during the time I have been in the profession, as well as by my personal experience. In my early days of study I was struck and excited by the circumstance that a surgeon of repute had cut into the bladder of a child to extract a stone where none could be felt. The case was considered an example of error in diagnosis. The patient recovered from the wound, but the symptoms of stone continued, and about three months afterwards another surgeon extracted a stone of considerable size from the bladder by the ordinary operation of lithotomy. Another case of a like kind came under my cognizance about the same time, and the impression on my mind was strong that in neither instance had the bladder been reached in the first operation.

In early life I assisted an experienced operator in this proceeding on the adult. Having, as he supposed, cut into the bladder, the stone could not be touched. Here I had an opportunity of examining the wound; and a suggestion having been made that the bladder had not been opened, the operator, with remarkable dexterity, cut further in the right direction, opened the viscus, and, with great rapidity, extracted the stone, which he had previously detected by sounding. In this instance I had no doubt whatever that the surgeon had not originally cut deep enough, but had made a space with the forefinger of his left hand, between the pubes and neck of the bladder, which he had for a time mistaken for the interior of that organ.

These and other similar instances which occasionally came to my knowledge, gave me a strong impression that in those cases where surgeons were stated to have cut for stone where one had not been present, they had probably not reached the bladder at all. In the course of time this impression has become much strengthened; and in giving, by this lecture, greater currency than heretofore to the frequent clinical observations which I have made on this subject, I feel assured that my experience and views will not be lost upon those who are earnest in the study of this most interesting operation.

As a beginner, I was taught, or had imbibed the idea, that lithotomy in children was simple in execution; and when I began to operate on the living body this impression was confirmed for a time. I had seen the incisions effected with admirable dexterity by means of a common scalpel, and in my first operation I used a similar instrument. The proceeding seemed simple in the extreme, and I adhered to the same method on subsequent occasions with most satisfactory impressions, until, unexpectedly, a difficulty arose which produced an effect on my mind that time cannot efface.

After many operations on the adult and on the young subject, I had in a manner forgotten my early knowledge of the position of the bladder in children, and not only was content to make the incisions with a simple scalpel, but had, in a measure, got careless about some matters of great importance. On the 17th of March 1849, I had to operate on a boy four years of age at King's College Hospital. I used a scalpel, as I had often done before, and made the ordinary incisions for lateral lithotomy. A grooved staff with a large curve was the director into the bladder. In making the deepest part of the incision I purposely used the cutting instrument as lightly as possible, with a view to open only a part of the membranous portion of the urethra, and notch the prostate and neck of the bladder. These objects being effected, the point of the forefinger of my left hand was, as usual, placed on the staff, and pushed gently towards the bladder. The finger went on, but I was aware that it had not got between the urethra and the staff. With an insinuating movement (much to be appreciated by the lithotomist who, as I do, professedly makes a small incision in this locality), I endeavoured and hoped to get its point as usual into the urethra and neck of the bladder. But here I felt conscious that I had failed. I was aware that the finger was getting deeper as regarded the depth of the perineum, but that I was not materially nearer the bladder. I could feel a considerable space at the point of my finger, and was convinced that the upper part of the membranous portion of the urethra, as well as the sides above the wound, had given way to the pressure of the point of the finger, and that now, as the latter was getting deeper into the wound, I was only pushing the prostate gland and neck of the bladder inwards and upwards. These parts seemed to recede before the smallest imaginable force, whilst I felt that I could in a manner make any amount of space round the bare part of the staff. I had no difficulty in distinguishing between the surface of this space and that of the mucous membrane of the bladder. Moreover, I knew that I had never crossed that narrow neck which is always felt as the finger passes into the bladder when a limited incision is made. An impression came over me that I was about to fail in getting into the blader, and I had the idea that, unless I could open the urethra just in front of the prostate more freely, I should possibly never reach the stone. Any additional use of the forefinger of the left hand only endangered the further separation of the prostate and neck of the bladder from the pubes, and I was conscious that the only safety lay in cutting a little more freely on the groove of the staff. This I effected with great caution, and then I could appreciate the passage of the finger as usual through the prostate and neck of the bladder. The stone was thereafter easily touched and removed; but when all was finished, I was forcibly impressed with the idea that I had nearly failed in the performance of the operation. Here (fig. 44) is the stone itself,—one of the smallest I have ever removed by lithotomy. An onlooker might not have been able to perceive the cause of this emergency, but I was myself conscious that I had not reached the bladder, even at a time when the finger seemed deep in the perineum. Happily, the patient recovered, though slowly, in consequence of the

Fig. 44.

lacerated character of the wound, and the formation of an abscess in the left testicle.

Until this date, I confess I had never fully appreciated this danger and difficulty in lithotomy in young subjects. I had read of the slipping of the gorget in this operation, and become acquainted with the fact that futile incisions had often been made, and with the supposed mistake of the surgeon in cutting when no stone was present; but now a new idea flashed on my mind, and from that time I have never lost sight of it. I have never performed lithotomy on children in public without referring to it. I have observed, since that time, that the subject has been alluded to by certain surgical authors, but I am not aware that it had ever been specially noticed before.

From all my experience I feel justified in stating my conviction, that most of the cases heretofore related as instances where the incisions for lithotomy have been made, and a stone has not been present, have been examples where the surgeon has failed to reach the bladder from the cause just narrated. Since I have been impressed with this view, I have known of cases where, death having followed the incisions, the stone has been found in the bladder at a post-mortem inspection; and I have also heard of others where the stone has been successfully extracted at a second operation, after the first wound has been allowed to heal.

The mishap is much more likely to occur than most surgeons imagine, and my opinion is founded upon the following grounds:—The size of the wound is necessarily limited, so that the forefinger of the left hand in a manner fills it. The perineum is much deeper in proportion in the child than in the adult, and, in addition, all the material is loose, lax, and loaded with fat. The circumstance that the bladder is more abdominal than pelvic in early life has been greatly overlooked. The slender tissue of the membranous portion of the urethra, the narrowness of the tube (both contributing to the facility with which the circumference may be torn through), and the small size of the prostate (rendering its discrimination difficult), all constitute peculiarities which are not conspicuous in the adult. In the latter there are room, development, bulk, mass, and a final wall of prostate and bladder, which may be all said to be deficient in the child.

From these data I have long since come to the conclusion, and have long taught in my lectures, that lithotomy in children, whilst comparatively free from danger as regards the final result, is by no means so free from difficulty or the risk of failure. The safety of result has been mistaken for simplicity of execution; but I hope that what I have now stated may be a warning to the young lithotomist. It may naturally be asked how the danger referred to can be avoided. My answer is, that more care than is usually given should be devoted to the operation, and that as the surgeon cuts into the membranous portion of the urethra and neck of the bladder he should never push the point of his forefinger onwards unless he feels certain that he has it between the staff and the wound.

To show that I do not now speak without a fair share of experience, I take the liberty of stating, that of one hundred and fifty-nine patients on whom I have performed lithotomy, fifty have been under the age of puberty—that is, under fifteen. Experience, instead of diminishing my anxiety on such occasions, has rather increased it; for as numbers have enlarged, I have been more and more impressed with the views above given. Of the fifty cases I have lost two—one was the third child I operated on, the other was the forty-eighth; so that of the whole number, I cut consecutively forty-four without losing a case, or forty-seven losing only one. Of the two lost, one died on the twelfth day after, from unhealthy inflammation; the other on the second day, from hæmorrhage and shock, the bleeding being probably the principal cause. Six of these were done in private practice, the rest in public—one (a fatal case) in the Royal Infirmary of Edinburgh, the others (forty-three in number) in King's College Hospital. I am not aware of such a list having been published before; and to myself, as I believe to the profession generally, it would be interesting to hear the results of the practice of those who have had greater experience than I pretend to in lithotomy in children.

The operation of lithotrity is now so familiarly known and so established in ordinary surgical practice, that it seems almost rash to venture any remarks upon it, or to affect the smallest originality. It is more than a quarter of a century since I myself ventured to write on a ground which was in a manner new to British surgeons.* The instrument now in common use was then but little known, for the bent double-bladed crusher of Weiss had not then displaced the three-pronged lithontriptic apparatus of Civiale. Like most others in those days, I was not slow to recognise the superiority of the double-bladed curved instrument—devised, I think, by Mr Hodgson, and made more perfect soon after by Weiss,—whether the crushing force was applied by the screw, or by the hammer force which was then introduced and practised by Heurteloup, and strongly advocated by Costello. Besides the common interest in this subject, a little modification in the crushing force—the rack and pinion, which I then proposed—engaged my attention further, and was probably one reason why in early years I had acquired an amount of experience in cases of stone in the bladder which does not fall to the lot of the generality of young surgeons in this country. Having now treated between two hundred and fifty and three hundred cases of the kind by lithotomy or lithotrity, I assume that my personal experience has been considerable, and I therefore venture to offer some remarks on the subject to which this lecture is in part devoted, which may possibly serve to advance and enhance one of the greatest achievements of modern surgery.

In the early history of modern lithotrity the grand object was to file, rasp, saw, or crack a stone into sand or fragments sufficiently small to pass with the ordinary stream of urine through the urethra; and even to the present day such may be said to be the doctrine of surgery. To such extent has this doctrine been carried, that caution has been given against searching the bladder in certain directions for fragments, or attempting their extraction by any other means than by coaxing them into a tube, scoop, or catheter, specially constructed with large eyes for that purpose.

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* Edin. Med. and Surg. Journal, 1834.

Paralysis of the bladder has been deemed one of the strongest objections to lithotrity, as it has been thought useless to break a stone where there was no power to expel the fragments. My impression is that these views have been held by the majority of surgeons in this country. I confess to have imbibed and acted on them myself; and it is because I think I know better now that I venture to offer the present observations on a subject which many consider to have lost its novelty.

In a large majority of my own early cases, I was content with crushing the stone, and waiting for the gradual and spontaneous egress of the fragments. I did make use of the so-called scoops, the large-eyed catheters (double and single), injections and currents of water, single or continuous; but with results so unsatisfactory that I had no confidence in any way of getting rid of fragments excepting by forcible disintegration and chance. In some cases nature and chance did all that was expected: the fragments came in good time, and the case was complete. In others, however, there seemed no end to the disease, which, in reality, appeared rather increased by the comminution of the stone. In one instance, during the early days of anæsthesia, the patient bore lithotrity as if nothing had been done. Whatever roughness there might have been in the operation, he was, under the influence of ether, unconscious, and he bore his condition afterwards most manfully. His malady, notwithstanding, seemed rather to increase than diminish; and his sufferings at last from the fragments were such that he requested to be relieved by lithotomy. I myself, wearied with the repeated unsatisfactory results, willingly complied. Lithotomy was performed. I extracted ten small stones by one swoop of the forceps. The operation did not last a minute; and I do not think that I ever performed lithotomy with less injury to the structures implicated or with more temporary satisfaction to myself. Yet the patient, a fine healthy man in all other respects, died within a few days.

Although unfortunately experienced in the mysterious way in which patients die after both lithotrity and lithotomy, I was greatly struck by the rapid result in this instance. He had borne with comparative impunity more than the usual amount of irritation and suffering after lithotrity; but he sank under lithotomy, like one with the powers of life already exhausted to the last degree.

This case made a strong impression upon me. I wondered how a man could bear so much from lithotrity and so little comparatively from lithotomy. As he stood the use of the lithotritic apparatus so well, I asked myself how it might have been if I could have removed all the fragments which would not come away, and which by their irritation kept upon him all the sad sufferings from stone.

Some years afterwards my attention was further attracted to this subject. I felt dissatisfied with my experience of extracting stone from the female bladder either by cutting or dilating. In July 1854 a case of stone in the female came under my notice. The patient was three years old, and wishing to avoid dilatation, I used a lithotrite made for the purpose by Weiss, smaller than any which he had yet constructed. With this, and a scoop of the same size, I cleared the bladder in two operations under the influence of chloroform, and the cure was rapid and perfect in all respects. I crushed first, and with the scoop extracted the fragments. With this I either extracted a fragment at once and entire, or jammed it so between the blades that I could withdraw the instrument (the blades containing the fragments) readily without serious damage to the urethra.

I was so much pleased with this practice and the instruments, that I resolved to try further, on the first opportunity, in the adult. In December of the same year, a gentleman with a moderate-sized stone came under my notice. On the 6th, the stone was crushed under chloroform. On the 13th, several fragments having passed in the interval, crushing those remaining was resorted to. On the 19th a few had passed, but not all that were expected, and in consequence the small scoop was introduced, and the bladder was, after several manipulations, seemingly cleared. The next day the patient was so well that he left town to go a considerable journey. In May 1858, nearly four years after, this patient came to town with some irritation like his former early symptoms. I examined, and detected stone. Having become in the interval, from further experience, more familiar with the use of the little scoop, I applied it here, and, without much trouble to myself or distress to the patient, extracted three small calculi, each about the size of a flattened pea, such as you see here (fig. 45). In a few days all irritation had ceased, and thus a cure was effected without even crushing, but simply by extracting. In July 1859 I removed from the same patient an entire stone (fig. 46), about half an inch in diameter, with the same instrument, and from that time he has remained free from disease.

Fig. 45.

Fig. 46.

Since the above dates I have almost invariably used these instruments in the process of lithotrity in the male. I have generally, as a first step, introduced a lithotrite of considerable size, equal to a No. 10 or 11 bougie, and broken the stone into various fragments. Next, I have taken the smaller lithotrite, above referred to, attacked these fragments, and then have used the small scoop with the object of removing several fragments, so that the patient might have satisfactory evidence that the stone had been crushed. In a few days after the small crusher and scoop have again been used—particularly the scoop, wherewith the fragments, when found sufficiently small, have been extracted singly, or two or three at a time. Thus, instead of waiting for the spontaneous escape of the broken portions, a process usually both uncertain and tardy, they have been got rid of by direct and precise surgical interference.

If this practice be judiciously carried out, it will, under ordinary circumstances, prove an immense advantage; and in many instances a stone may be removed with a rapidity little short of the time needful for lithotomy, with the advantage that the patient need not be confined to his bed for a single day.

My chief object in this portion of my lecture is to draw attention to this subject. It is comparatively little known; and, moreover, a very general impression prevails that it is incorrect to extract fragments. The various instruments and mechanical devices which have been from time to time recommended or used for this purpose, or to facilitate their escape, have generally proved of so little service that they have been in a manner overlooked or laid aside by the practical lithotritist. It has even been taught that no attempt should be made to extract fragments; and, as I have already stated, so strong is the feeling in this respect, when stone in the bladder is conjoined with paralysis of that organ, that the operation of lithotrity is considered highly objectionable, if not impracticable, because there is no likelihood of the fragments passing away, excepting through a large-eyed catheter or scoop made specially for the case.

With the instruments which it is my object to recommend, the process of lithotrity, and I believe the distress of the patient both bodily and mental, may be considerably abbreviated; and instead of paralysis being objectionable, it is perhaps the condition most favourable to the operation, as it generally happens that with paralysis there is a callousness of the mucous membrane of the bladder which permits a freer use of the blades than under ordinary conditions.

In early days a large instrument was thought essential for the due performance of lithotrity. The risk of bending or breaking was deemed considerable and serious, and on these grounds the largest instrument which the urethra would admit was selected for use. If a catheter or so-called scoop was used afterwards, its magnitude was thought of equal importance; and to give every advantage in this respect, it was recommended that the urethra should be dilated, and, if needful, the orifice in the glans enlarged by incision, prior to the use of lithotritic instruments.

As to the advantage of a larger urethra there can be no doubt; but I believe that large instruments are by no means so essential. Indeed, I feel assured that comparatively small-sized ones are an advantage, and in certain stages of the treatment I consider them of great value.

The modern lithotrite, particularly of the best English makers, is a very superior instrument to those in former use; and less force is required to break an ordinary stone than was imagined. We seldom hear of an instrument of the kind either bending or breaking; and in the course of time I have come to the conclusion, that one of small diameter permits of more ready manipulation than where the size is such as to fill, and be in a manner grasped by, the urethra. Hence, then, I have for many years employed lithotrites of smaller diameter than those in common use. An objection to small sizes has been made, because when the bladder is irritated to spasm the water escapes, whereas it would not if the urethra were filled (plugged) by a large instrument; but the escape can readily be prevented, if desirable, by grasping with the fingers and thumb. Even in regard to the quantity of water required in the bladder during the operation, I believe that there is no such necessity for a large amount as some have imagined. When the organ is distended with eight, ten, or twelve ounces, the stone is usually more difficult to be caught than when the quantity is smaller. The slightest touch causes it to move where there is a large amount of fluid, and fragments are certainly much more difficult to be detected and seized. No doubt it is unwise, even dangerous, to open the blades of a lithotrite freely in an empty bladder, or one with very little water in it; but I have long been convinced that there is no need for the presence of so much fluid as some have thought.

The chief objections that I myself have found to very small-sized lithotrites or scoops are, the comparative difficulty of passing them into the bladder, and, especially, the comparative difficulty of sounding for fragments. In the finer manipulations of the sort it is hard to say whether the sense of touch or of hearing is of the greatest value. I am almost inclined to give the ear the preference; but even with this it is of the greatest consequence that the utmost facility of movement should be permitted, and hence I am averse to the use of the sounding-board, as recommended by Mr Brooke and others, as also to the use of instruments which fill up the urethra to such an extent as to prevent the free movement of the point within the bladder.

I was so early impressed with the necessity of having a narrow shank for a sound, so that every facility should be given to movement, that I had Heurteloup's sound, as it is called, modified accordingly. The shank was made of smaller diameter by several sizes than the curved end, and thus the latter was a sort of lob, which could be turned about readily in all directions, while its comparatively large size gave more certainty to both hand and ear. An instrument of the kind (fig. 47) has been depicted in the later editions of my work on Surgery, and is now in considerable general use. A

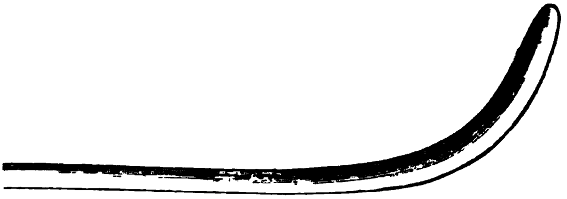

Fig. 47.

sound of this sort is of far greater value than one with a thick stem or with a slender stem and equally slender point; and, in accordance with my views on these matters, Mr Matthews has lately constructed, on his own device, a lithotrite with a narrow stem and lob-point, which, in my opinion, goes far to facilitate the effective use of the lithotrite in ordinary cases of stone. This figure (fig. 48) gives a representation of it. The force is applied by the rack and pinion, in accordance with my own views on this subject, but of course the same shape will answer for the various ways in which the screw force has been so admirably applied in modern times by Messrs Weiss and Mr Coxeter. The figure shows the blades open, but when closed there is a lob-end, like that of the sound in fig. 47. The narrow shank permits free movement both in the urethra and bladder, and the increased bulk at the end intended to touch the stone gives development to both touch and sound.

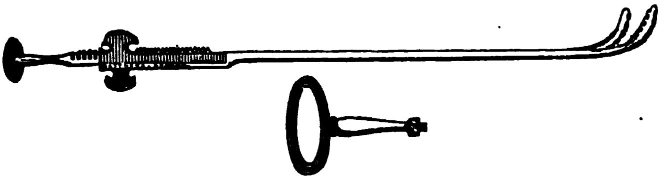

Fig. 48.

But these instruments (figs. 49 and 50) are those to which I am most desirous of drawing attention. Fig. 49 shows the diameter of a lithotrite which I often use in dealing with fragments, and fig. 50 shows a scoop of still smaller diameter. The small size must appear remarkable even to those familiar with the lithotrites and scoops hitherto known. I am not aware that any so small as fig. 50 has ever before been made. Mr Matthews, the instrument maker, informs me that there were none in the recent International Exhibition, and certainly none came under my own observation.

Fig. 49.

I have instruments of the kind in my possession varying in size from No. 3 to No. 6 bougie or catheter sizes, and with them I am in the habit, as I imagine, of diminishing the period usually devoted to the completion of lithotrity.

Generally when a stone is crushed the fragments are left to chance. So-called scoops and big-sized catheters have been introduced, and by the natural stream, or the force induced by injections, the fragments have been extracted, and have occasionally appeared in quicker time than if left solely to chance; but in the majority of instances the surgeon and patient have waited for the chance escape of the fragments without instrumental aid.

At this date there is ample experience to show that after a stone is crushed by one or repeated sittings, the fragments do come away, and a perfect cure is the result. But in many instances the last fragment is tardily discharged, and many weeks or many months elapse ere the cure is complete.

It may be justly said of successful lithotrity that neither weeks nor months are long in comparison with the advantages gained; but, for the credit of surgery, it may be claimed as an advantage to do that in a few minutes which nature might take weeks or months to accomplish.

The chief object I have in view in these remarks is to establish this practice.

Supposing a stone crushed and its fragments comminuted, my proposal is, that these should be removed at the same time, or as soon thereafter as may be. The lithotrites generally in use are so large that they can be withdrawn from the bladder only when shut. If a fragment rests between the blades, it must be comminuted before these can be closed. The same remarks are applicable to ordinary scoops. Comminution must be so effectual that the blades may be closed, or nearly so, and all that can be brought away is the small bruised portion held in the hollow between the blades.

With a small lithotrite and scoop (fig. 50), such as I am in the habit of using, a fragment of considerable size may remain betwixt the blades, and yet the united

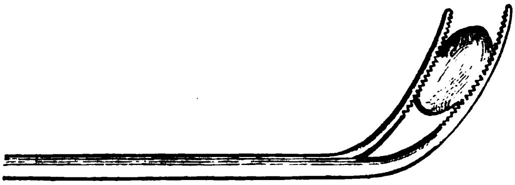

Fig. 50.

size or diameter may readily pass or be drawn along the urethra.

In the last sixty cases I have adopted this practice generally, and, with few exceptions, have had every reason to be satisfied. Occasionally, when over-anxious for a rapid cure, I have extracted fragments rather too large to come readily along the urethra, particularly in the prostatic or membranous portion, or at the triangular ligament. In some, when the urethra nearest the neck of the bladder has been rather roughly used, there has been considerable irritation; in others, even under such circumstances, there has been no irritation whatever; and in many instances I have been able to effect in one or two operations within ten days what, according to custom, would take weeks, or possibly months. I have done, in fact, by a precise surgical manipulation, that which according to ordinary rule is left entirely to chance. Experience has taught me that it is almost hopeless to trust to chance in all such cases; that in many instances the fragments may be weeks, or months, in coming away, even with attempts to coax them through catheters with large eyes and other instruments devised for the purpose. Here are the fragments of stone crushed in a man whose bladder acted regularly, yet only a few of these passed spontaneously; all the rest were removed by the scoop in question in three or four operations. From first to last there was not a single bad or even troublesome symptom. The patient was detained scarcely an hour in bed beyond his regular period of rest. I never saw one suffer less distress; yet before he came under my notice, he had been strongly urged by an eminent surgeon to submit to lithotomy.

It is considered an extreme misfortune for a patient to have stone in the bladder and paralysis of that organ at the same time; and it has been well-nigh a rule in surgery that lithotrity is scarcely eligible in such cases, on the ground that the fragments are not likely to be expelled or carried off by the stream of urine through the urethra or a catheter. Of course I am aware that there have been successful cases of the kind; but the success has been more from lucky chance than from skilful surgical interference. And my object in these remarks is to claim for surgery a direct, special, and precise mechanical movement, whereby that which has heretofore been left to chance is converted into a certainty. Here are the fragments of a large stone from the bladder of a patient who could not pass a drop of water without the aid of a catheter. All of them, with a few minor exceptions, were extracted with a small scoop. Here are the fragments—from a similar case, where, however, the urethra was unusually large—which were all extracted by a small scoop by my friend, Mr Henry Smith. The largest of these fragments (fig. 51) is about three-quarters of an inch long, by about half an inch wide, and it was extracted without any laceration or marked distension of the urethra; yet through the

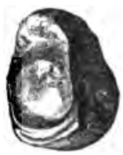
Fig. 51.

neck of the bladder, or a urethra of this size, even the urine would not flow.

The mechanical development, if I may so call it, of stone shows the uncertainty of its spontaneous expulsion from the bladder. Most calculi have each a nucleus far smaller than the diameter of the urethra, but how few such nuclei pass! At all events, stones larger than the diameter of the urethra—nearly all the instances in which lithotomy and lithotrity have been performed—are examples where small round bodies (the nuclei) have not passed away spontaneously.

Now, I claim for surgery the power of taking away such bodies. I do not profess originality in this respect, for we all know what was done by Sir Astley Cooper in this way, but the instrument he used in removing small calculi—gravel, we might say—is of inferior mechanical powers to the modern lithotrite. It would be of little use in dealing with fragments in lithotrity; nor would the ordinary lithotrite or scoop be of much use in what I now speak about. These specimens (fig. 52) represent four out of eight-and-twenty removed by one of the scoops referred to.

Fig. 52.

The small instruments which I now show are essential to the practice which I advocate, and with these I maintain (as I have amply tested in numerous cases) that lithotrity can be abbreviated and brought to a certainty such as has not been claimed for it hitherto.

LECTURE V.

ON EXCISION OF THE KNEE.

MR PRESIDENT AND GENTLEMEN,—In preceding lectures I have referred, again and again, to excisions or resections as being characteristic of modern surgery. These terms are applied in various ways and directions: to cutting, scraping, and gouging, after the rare old fashion of Hey the great, of Leeds; to the removal of exfoliations and sequestra, as nature thrusts these effete parts before the eyes and hands of surgeons; to the extraction, with judicious cuttings, of small or large portions of the long or flat bones; to the separation of entire bones with, in many instances, a boldness and skill adding romance, as it were, to the art of surgery; to the ablation of a phalanx or of the whole scapula; and to the excision of the ends of bones constituting movable and important articulations. These are themes worthy of the highest reach of practical surgery—worthy of all that one in my position could say concerning them, and more than worthy of the humble efforts which I can make to bear upon them.

Thanks, in my opinion, to the skill, labour, judgment, and forcible example of the Professor of Clinical Surgery in the University of Edinburgh, excision of the elbow-joint has now become "a great fact" in surgery. Where there is doubt or mismanagement on this subject, surgery is thirty years at least behind. To the same authority, aided largely by examples from military practice, we may attribute our confirmed ideas regarding the advantage of excision of the head of the humerus in appropriate cases. Excisions of the ankle and hip have each been greatly developed by our youngest Councilman, Mr Hancock. These, the wrist, and even the joint of the great toe, have all had the attention and action of your humble servant, but in none of them have I taken such personal interest as in excision of the knee; and I mean to devote this lecture to such a sketch of that subject as shall possibly give it further interest in the estimation of both those who have inclined towards it and those who have opposed it.

Whilst every anatomist recognises the analogy between the upper and the lower extremity, the physiologist and surgeon sees a vast difference in their respective action, function, and position. In particular, in reference to our own matters, we have to recognise the difference in bulk, and the difference in that which is destined to carry and that which has to be carried. The upper extremity is carried; the lower has to carry. Man may be characterised by the largeness of his brain, by his superior intelligence, by his prehensile powers, or his qualities as "a cooking animal;" but there is no physical feature so characteristic of the genus *Homo* as the perfection of his lower or hinder extremities. Even the gorilla, supposed by enthusiasts to be next to the "missing link" to our frail humanity, falls endlessly behind man in respect of his lower or hinder extremities.

How or why, then, may I ask, have we surgeons been so callous on this subject? How does it happen that where disease of the knee-joint has been to all appearance incurable, we have heedlessly and recklessly removed one of the most perfect characteristics of our superiority of configuration in animal life? There is no denying the fact; and it has been a proud boast among us, that when hectic has been running its uncontrolled course in conjunction with severe chronic disease of the knee, the malady has been suddenly arrested by amputation of the limb. Something like natural sleep has been obtained within a few hours after this formidable ordeal; the pain of the wound has been as nothing compared with that of the disease; and the pulse has fallen rapidly towards a natural standard. To say the truth, there does, at a superficial glance, here appear a mighty and beneficial agency on the part of surgery. Yet it is obtained at an enormous sacrifice. A perfect foot, a nearly perfect leg, a considerable portion of a nearly healthy thigh, have been removed, and loss of life from the amputation has often followed. Yet, with all these drawbacks, the results of this operation have appeared so satisfactory, that life has been willingly staked by both patient and surgeon, with the eager hope of safety and relief from that which has come to be beyond human endurance. Until a comparatively modern date it seems scarcely to have entered the surgeon's mind that better could be done; and so, in badly diseased knee-joints, there seems to have been no alternative between a painful and possibly shortened existence, and the chance of a formidable operation which involved great risk to life, and included the actual loss of well-nigh one-fourth of the frame. Few seem ever to have thought that there could be any alternative, excepting that of letting nature struggle on as she best might, in the faint hope that the disease would wear itself out; and so, when Park first announced a novel and successful expedient to remove the disease and leave a yet useful member, the fact made but little impression on either the profession or the public. It is specially worthy of remark in this theatre, that the name of Park is associated in this history with that of one to whose memory we, in all reverence, and most worthily, give the utmost respect. It was a great honour done by the surgeon of the Liverpool Hospital to Percival Pott, of St Bartholomew's, when in September 1782, he wrote "a few sheets, in which," to use his own language, "I hope to show that in some of the affections of the knee and elbow, in which amputation has hitherto been deemed indispensably necessary, surgery has yet another resource, which, as far as my reading and experience enable me to judge, has not yet been attempted by any other practitioner . . . . . the resource I mean is the *total extirpation of the* *articulation."*[*] Park had actually underlined the latter words, thereby, as it were, upholding impressively the originality of the expression.

Four-fifths of a century have passed since Park thus wrote, and the latest echo to this grand announcement is thus recorded in 1861, by one of the present surgeons and lecturers on surgery: "The excision of joints does not find much favour at St Bartholomew's. It has been practised only once, and that in the elbow."[†] This refers to the year 1860.

But there are many excuses for the great Percival Pott. If he, as a leading star, took no action on such an announcement, he in this respect but resembled his fellow-mortals. Not a breath, not a pen, not a knife, stirred in England on the subject. Even Moreau the elder, although in a manner inspired by our English surgeon, failed to impress upon his immediate contemporaries any possible value of the "extirpation of an articulation." The modest effort from Bar-sur-Ornain was as little heeded as that from the banks of the Mersey. Although Park and Moreau had shown that which had not previously been dreamt of, each passed to his grave with hardly even a recognition by their contemporaries of the great things they had done. Like many poets and painters, their greatest fame has been posthumous, and my own impression is that even to the present day the value of their labours has not been thoroughly recognised.

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[*] Letter from Park to Pott.

[†] The Lancet, vol. i. 1861, p. 98.

It is a remarkable fact that, in referring to excision of the knee and elbow, Park invariably put the operation on the lower extremity foremost. This, doubtless, was because he had operated on the knee first in the living body. Although he suggested both operations, it was reserved for the elder Moreau to have the honour of first performing that on the elbow. This now famous operation was done 26th June 1797, fifteen years after the date of Park's announcement. The ingenuous Frenchman gives Park his full credit, and in that respect differs from some of our own countrymen, who have evinced a disposition to award the honour regarding the early start of excision of the knee to Filkin of Northwich, who, as stated by his son some twenty years after, performed this operation successfully in 1762. But Filkin's case, like that of Justamond's partial resection of the elbow, had no influence on Park's original conceptions. The knowledge of these cases came to him at secondhand afterwards, and he it was, in fact, who first gave them notoriety when publishing his second case of excision of the knee in 1789.* Had it not been for Park himself these cases would probably have been shrouded in everlasting obscurity. They no more detract from the merit of the Liverpool surgeon than do the occasional excisions of the elbow (said to have been practised in the midland districts of England since his time) from the just credit due to Mr Syme of Edinburgh, for the revival of the operation.

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* London Medical Journal, vol. xi.

My present time will not permit much further historical reference. Suffice it to say, that a profound slumber closed upon the efforts of Park and the Moreaus until within our own period. A few spasmodic efforts seem to have been made from time to time, and among our own countrymen none were so remarkable as those of Hewson, Crampton, and Syme. The first two were comparatively apathetic on the subject, and the proceeding was discouraged by the last, who some thirty years ago operated on two cases, from which experience he expressed himself unfavourable to the operation. Nothing, save the usual discouraging historical notice, was said of it for about twenty years, whilst during that time excision of the elbow became an established operation. Often and often had I myself felt deeply grieved to see a well-made foot, totally free from disease, and a leg on which the pathologist would scarcely glance, swept away by amputation in the thigh for disease of the knee. Often did I think of the casuistical expression of those who know no better, that "amputation is the opprobrium of surgery!" Why, I thought, should excision of the knee in incurable disease of the joint not do as much in proportion as excision of the elbow in a similar condition? What but bulk, or comparative magnitude, constituted the great difference between the two operations? If excision of the elbow saved a useful hand and forearm, why should not excision of the knee be equally useful in saving the foot and leg? The comparative size of the limb and joint seemed the grand objection; but here it became a question whether excision of the knee or amputation in the thigh might prove most or least hazardous to life. These latter points seemed to me those of the greatest interest in regard to this proceeding; for whilst we had indifferent results as respects the condition of the limb after both operations, we had the recorded experience of Park regarding his first case, in referring to it six or seven years after, that the patient had "made several voyages to sea, in which he was able to go aloft with considerable agility, and to perform all the duties of a seaman; that he was twice shipwrecked, and suffered great hardships, without feeling any further complaint in that limb."

It seemed to me that this great question had never yet been investigated. One or two cases here and there did not appear to me sufficient to settle such an important matter.

In July 1850, I performed the operation on a patient in King's College Hospital, in whom all the circumstances seemed most favourable. Whilst there was painful disease, of which the patient was tired, and for which he willingly consented to amputation, there was youth, and apparent health elsewhere. The disease seemed limited to the cartilages, and I could not imagine a more favourable instance for the object I had in view. Yet nothing could have been more disastrous than the result of this operation. The patient died, after sufferings equal to any I had seen follow great operations. In particular, the starting of the limb appeared equal to, if not more troublesome than, any I had ever witnessed in compound fractures of the lower limb or after amputation. A post mortem examination showed that acute necrosis of the lower end of the femur had ensued.

I confess that I was in some degree daunted by this case; yet, as I had seen as much local mischief and also death occur in equally promising cases after amputation in the thigh, I resolved to suspend my judgment. Not long afterwards the late Mr Jones of Jersey essayed the operation with more satisfactory results; and, as time rolled on, his highly successful repetitions, as well as the operations of others, attracted the attention of many of the young surgeons of the day. Among these I may particularise Dr Richard Mackenzie, surgeon to the Royal Infirmary of Edinburgh, who, although remarkably familar with excision of the elbow, took the trouble of a distant journey and voyage to see Mr Jones's cases and operations. The impression on his mind was such as to induce further investigation; and had it not been for his untimely death, in pursuit of professional knowledge and honour "at the cannon's mouth" in the Crimea, I have no doubt in my own mind that we might have had by this date an amount of evidence for and against that would have gone far to settle, in the minds of many who still doubted, the very important question as to the eligibility of this operation. Beyond the impression which my own humble exertions and example made, nothing went further for a time than that produced by the active practice of Mr Jones. That gentleman, in a comparatively limited sphere, operated on fifteen cases, and in fourteen of these with success.

Various pupils of my own devoted special attention to this subject, amongst whom I may mention Mackenzie, Smith, Edwards, and Price; but, fortunately, there were others on whom my personal influence might be supposed to have little effect, who wished to give trial to this comparatively novel proceeding, and thus the operation was practically tested on a pretty extensive scale. It seems almost invidious to mention names where so many are concerned, and it may suffice, particularly for my present purpose, if I refer to the writings of Mr Butcher of Dublin, Mr Pemberton of Birmingham, and Dr Humphry of Cambridge. These gentlemen have, each in his own way, given remarkable notoriety to this operation; and it was at a still more recent date put again before the profession by Mr W. M. Clarke of Bristol, in a paper of great research which he read to the British Medical Association in August 1863.

Excision of the knee seems, like all similar operations on other joints, a very formidable process, particularly when performed on the normal tissues in the dead, or when witnessed by any one not familiar with such operations on the living body. The destruction of tissues and parts on the dead, before the component parts of a joint can be cut away, appears more than human strength can bear or survive; and the chaos of tissues, structures, and surfaces, with, in most instances, the discharge and separation of blood, pus, and substance, perceptible in the living body, naturally lead any one, as yet uninitiated to this practice, to the conclusion, that with roughness, tediousness, magnitude, and irregularity of surface, the chances of the patient for limb or life are slender indeed. There is scarcely a coarser operation in surgery than excision of the elbow, yet in the present day no one objects to it either on that score or on any other, unless it be some old stagers who adhere, even in the wane of the nineteenth century, to the customs of their grandfathers. Excision of the knee is simple and elegant in comparison, although it must look formidable in all respects to the novice. It is a common custom to compare amputation and excision, as regards local appearances and facilities of proceeding, and amputation invariably carries the palm. The clean incised wound in the arm or leg for diseases of elbow or knee seems what might be called a luxury to the patient when compared with the haggling process of excision. Yet in excision the member is left; in amputation it is gone! No human power can restore it. Look to the condition of one who has had his arm amputated for disease of the elbow-joint, and look to one who has had an equally successful excision. No artificial substitute can compare with the human hand.

If excision of the elbow has superseded amputation in the arm as a general practice for incurable disease of the elbow, why should the practice not hold equally good in the lower limb? That is a question which I for years put to myself—which I still do, though in a less uncertain mood; and it is a question which I avail myself of such an opportunity as this to put again to myself and the profession.

Who among us has yet discussed this question practically? A few gentlemen who have had considerable experience have declared in favour of the operation, and a few with less have evinced a leaning to the old system of mutilation. But the greatest objectors of all have been those who have had no personal experience whatever, or who possibly have formed their opinions upon a single case or two, where the result has been questionable or fatal. The subject has still to be dealt with fairly and dispassionately. I doubt if I can do either, although, possibly, having the largest personal practical experience on it of any man living. I fear that I am prejudiced, albeit my efforts in public practice have been made with the hope that by encouraging others to undertake the operation, I might one day be able to say with more forcible authority that the proceeding is one which should be either abandoned or adopted in the practice of surgery. I cannot say that my hopes in this respect have been realised. The proceeding has not been adopted as a practice in any great hospital in Britain, unless, indeed, I except that with which I myself have the honour to be connected. Many operations of the kind have indeed been performed in our public hospitals, and I feel bound to say that these have been chiefly what are called provincial and country. This is not the place, nor is it the time, to discuss the merits of hospitals within or without the line of the metropolitan or great school districts; but it is beyond a doubt that this proceeding has been more largely practised and more considerably dealt with in provincial practice than in the recognised and accredited metropolitan seats of learning and instruction. In Dublin, Jersey, Cambridge, Birmingham, Manchester, Aberdeen, Exeter, and Bristol, it has been more frequently performed than within the circle around Lincoln's-Inn-Fields. Next to King's College, I believe that it has been oftener performed at St Thomas's than elsewhere in town; and in as far as I am aware, the experience in other hospitals of London has been so comparatively limited that we have no important data to go upon; for whilst the best results have ensued in some instances, the worst have occurred in others.

The value of this proceeding has been variously estimated by different writers. Usually it has been com pared with amputations in the thigh, and the relative fatality has been the test; with some the rapidity of closing of the wound and discharge as "cured" have been thought of most importance; and with others the condition of the limb afterwards has absorbed most attention. Strange to say, the preserved limb has rarely, if ever, been compared or contrasted with a stump in the thigh, or with its intended facsimile as made out in the shape of a cork or wooden substitute!

The value of human life is comparatively so surpassing—the continued union of soul and body is of such importance in our estimation, that the chances of life and death must always form an exciting subject for consideration when an operation of importance is in contemplation; and here, as in other departments of operative surgery, it is right that a question of such weight should be placed first.

The largest number of cases treated by a single hand heretofore published is that by Mr Jones; and in as far as I know, the next largest is that of Dr Humphry, related to the Medico-Chirurgical Society in March 1858. Of thirteen cases, only one died; and in this paper the reserve step, which some who had practically thought of the operation advocated, was first prominently brought under notice. In the instances in which the operation seemed to have failed, amputation in the thigh was performed; and there were four such, of whom one died. Of thirteen excisions, twelve lives were saved. In how far a similar success as regards life would have followed amputation, had it been the chosen operation, no man can tell. Dr Humphry candidly expressed his own opinion in concluding the paper referred to, that he "should not have obtained an equally good result by any other mode of treatment."

Hitherto all other lists from individual surgeons of this country have been fewer in number; and, still speaking in comparative ignorance, the cases which I myself have dealt with are perhaps the most numerous. I have now performed this operation forty times, and of these no less than fifteen have died more or less directly from the operation. This fatality, it must be remarked, is wonderfully greater than that of the operations above referred to; and as regards the aspect which I am now considering, such large loss of life might go far to settle the question of fatality as compared with amputation of the thigh. Yet I am not disposed to acquiesce in this view. I may myself have been too zealous, and resorted to the operation where I should have selected amputation, when death would have passed as an ordinary chance. I cannot overlook that I had not the advantages for my patients of the pure air of Jersey or of Cambridge, of Exeter or of Bristol; nor can I even fancy that the site of King's College Hospital, on the verge of Clare Market and Drury Lane, although within touch of the Royal College of Surgeons of England, could be compared for salubrity with that of St Bartholomew's, St Thomas's, or St George's. There is the authority in print of a famous London alderman, that Smithfield is the healthiest spot in London; and I cannot but think that if a like number of cases of this operation had been performed by the surgeons of the hospitals referred to, we might have had recorded a success well-nigh equal to that of Messrs Jones and Humphry and the Bristol surgeons. But, even with the fatality following my own personal experience, I am not disposed to take an unfavourable view of the operation; for, looking to all that I have seen and done as regards amputation, I hesitate to say if I should have been successful in saving life to a larger extent, in the same individuals, had amputation been resorted to. Against this practice of my own I can place ten other operations in King's College Hospital, performed by my colleagues, with the death of only one patient; and this view of the fatality of the proceeding can be rapidly modified by adding such success as has been gained by Jones and Humphry. I know, moreover, that in certain provincial hospitals the results have been highly satisfactory. Besides the details published by Mr Clarke of Bristol, I may state that I was made acquainted, during a recent visit to the Exeter Hospital, with the marked success of the surgeons of that institution, who had operated in about a dozen cases within the last few years, without, as I understood, losing one.

The largest number of collected and original cases with which I am acquainted was made some years ago by my friend and former assistant, Mr Price. The list amounted to nearly 250, and went to show that the fatality was pretty much the same in excision of the knee and amputation in the thigh. I do not think that as yet we have data of greater importance on this point. The success, or want of success, of amputation in the thigh, as detailed by Mr James of Exeter, Mr Bryant of Guy's, or Mr Callender of St Bartholomew's, can have no direct bearing on this question until a like number of cases of excision of the knee in the same or similar institutions can be brought to bear on the point. There is nothing in physiology, anatomy, pathology, or practical manipulation, which should make this operation more hazardous to life in proportion to amputation in the thigh, than excision of the elbow is in proportion to amputation in the arm.

My impression is that excision of the knee is, or should be, by proper treatment, as little destructive to life as amputation in the thigh; and if this be proved and granted, as possiby it may be in time, then I firmly believe that all other objections to this operation must pass away like those which so long retarded the application of excision to the elbow.

The time required for a cure, so called, has been a great element in this operation. It has been common in amputation of the thigh to dismiss patients from hospital, or to give up regular attendance, in the course of three, five, seven, or ten weeks after. Six weeks may be taken as a favourable average period to show the rapidity of cure. Little, or perhaps no notice has been taken of some small sores or sinuses still present; nor has the after-course of these, or of the stump, been specially referred to, excepting when, perhaps, many months or years after, there has been a necessity to repeat an amputation for an ill-conditioned stump, or to remove some portion or portions of necrossed bone. But even then a whisper has never been raised against amputation, or the particular kind of amputation; or possibly, the surgeon who performed the operation may have been criticised freely, but the fault has never been (and very properly so in my opinion) laid to amputation itself as a surgical operation. In the elbow and shoulder, where excisions are extolled or sanctioned, the wounds are in reality often slow in healing; months—ay, years—elapsing in even most satisfactory cases before the sinuses are perfectly healed. But in such instances the patients can move about with seemingly little defect. The arm can be carried; but if anything prevents the lower limb doing its proper carrying function the defect is more manifest. As the knee is big in proportion to the elbow, so may the entire healing process in excision be longer in proportion; and as the subsequent strain upon the lower limb is greater than that upon the upper, so must there be greater time given for a perfect result. These features, with a slight variety, are admitted between stumps of the lower and upper extemities, and they seem to me to be equally worthy of attention in the cases of excision.

But in my opinion a mistake has been committed in such comparison; for the wound in all great features is not different from that of amputation, and the continued presence of the lower part of the limb constitutes such an important fact, as compared with its absence, that it seems to me a waste of time and argument to dwell further on this question. The true comparison of excision of the knee is with compound fracture of the lower end of the femur or upper end of the tibia, possibly communicating with the knee-joint, or with a direct penetrating wound of the joint itself, which has exposed the interior to the surrounding air. If I am not much mistaken, the feeling in modern surgery is, that time is of little moment contrasted with a useful and therefore creditable limb. If months, even years, elapse before such results are effected, does surgeon or patient ever begrudge the time? Is there a surgeon of experience who has not felt his heart palpitate with pleasure on looking at one of these illustrations of the powers of nature, and of his own faith and skill, in bringing about such a pleasing conclusion? Suppose a compound fracture—say of the shaft of the tibia: has he not been gratified, even after the separation of inches of necrossed bone, to see a useful limb retained? Does he not feel in his heart that Ambrose Paré and Percival Pott did not live and suffer in vain?

As a compound fracture in the lower extremity is uncertain and slow in healing compared with a simple one, so may the wound in excision of the knee be compared with the healing of a stump. But, to put this part of my argument briefly and on a practical basis, I admit freely that such wounds are generally more slow—much more slow, in healing than others; yet I have seen after excison of the knee what I have never seen after compound fracture of the tibia—patients walking about freely, on crutches, eight weeks, six weeks, even three weeks afterwards; some even putting the foot to the ground with a pressure which no stump of the thigh could have borne at such a date. But I must refer to this subject again, and to give it justice I must bring others under present notice.

The condition of the limb afterwards has, perhaps, attracted most attention. In a brief lecture like this, and coming near the end of it too, it would be impossible to notice all that has been said on this subject. The splendid result in Park's first case seems to have been almost overlooked. From 1789 until within these few years all, by silent assent, seem to have sanctioned the conclusion that a stump in the thigh and an artificial limb, whatever its kind, were better than protracted disease or death. Excision well-nigh slept, and, with perhaps the exception of what had been done and said by Crampton, Syme, myself, and Jones, no one seemed to have thought seriously on the subject.

LECTURE VI.

ON EXCISION OF THE KNEE.

MR PRESIDENT AND GENTLEMEN,—After the initiatory labours of those whose names I mentioned at the close of my last lecture, the operation of excision began to attract the notice of others, who took both a practical and theoretical review. In particular, Dr Humphry of Cambridge, and Mr Pemberton of Birmingham, drew attention to the fact—seemingly new to both—that after excision of the knee, in persons under full size, the limb did not grow in proportion to the other. Not only was the limb shortened by the length of the ends of bone removed, but actually, as was clearly pointed out in certain cases which were carefully watched, the limb all but ceased to grow, and was outstripped by its fellow some five or nine inches.

This is hardly the time or place to discuss the merits or questionable points of Dr Humphry's ingenious and admirable papers on the growth of bones in their long axis at their epiphysial cartilages. I mean, therefore, to allude to them briefly. They seem to have been suggested chiefly, if not solely, by excision of the knee, and their main object appears to be that of pointing out generally that long bones grow in length entirely at the cartilage at the end of the bone next the epiphysis, and particularly that the femur grows in length chiefly at its lower end, where it joins or is joined by the epiphysis. The practical deduction from this is, that if, in resection of the knee in a growing subject, the epiphysis and epiphysial cartilages be cut away, the femur will not grow in proportion to the rest of the body; and hence a serious objection has been raised to the operation in young persons. This matter was first hinted at in Dr Humphry's paper read before the Medical and Chirurgical Society in March 1858, and was more elaborately worked out in subsequent papers laid before that Society in 1861 and 1862. The same author has alluded to the subject in his valuable "Treatise on the Human Skeleton," published in 1858, and he there comes to the conclusion, that in such instances when the tibia and femur might unite by ossific junction, "the objection urged against the operation might prove valid."

The union of physiology, science, and practice here has given great force to the observations of Dr Humphry; but attention was still more prominently brought upon the subject by a remarkable paper published by Mr Oliver Pemberton of Birmingham, in 1859. The main object of this paper was to show, that in a youth operated on for excision of the knee in 1854, the limb in 1859 was nine inches shorter than its fellow. Another analogous case is cited from the practice of Dr Keith of Aberdeen, where, in the course of "nearly six years, the deficiency of growth is measured by five inches." To add to this objectional feature in Mr Pemberton's case, there was no bony union; and in Dr Keith's case, at the end of the time referred to "the union was not strong, and there was a bending outwards."

But the true parallel, the true value of excision of the knee has never yet been drawn to its full extent, in as far as I am aware. Life—life and comfort may be considered as the highest and best result of surgical interference in a case of incurable disease of the knee-joint. Even yet we have not sufficient data on those heads. My own impression is that the question of life between amputation and excision will be pretty nearly balanced; indeed, I shall venture a step further, and say that if excision were to get all the subsequent comparative advantages willingly given to amputation, the hazard of one operation would be less than that of the other. If I am not mistaken, an idea prevails that excision of the elbow is in reality a safer operation than amputation in the arm; but such is not mine. Few fatal cases of this excision have been recorded, but I have seen as many as to convince me that the mortality is probably as great as that of amputation above the elbow. Happily, such a result is rare in either instance.

Whatever the mode of amputation, it must be acknowledged that neither skill, forethought, manipulative perfection, nor after-treatment, whether local or constitutional, can invariably avert some of the evils (less than death) which are known from ample experience to follow such an operation. The occasional evils of secondary hæmorrhage, of unusual retraction, of scanty covering, of chronic sore therefrom, of caries or necrosis, of tender cicatrix, of neuroma on the great nerves, and of secondary operative interference, have all been in a manner ignored in this comparison. And yet how often have all men of experience seen cases of the kind? Neuroma is certainly rare in the lower limb; yet, allowing the most perfect results—allowing the stump to be above criticism, what is it after all? It is only a portion of thigh whereon to fix an artificial limb. If this cannot be done, the sufferer must ever after be dependent on crutch and stick.

I beg it to be observed that I do not bring these features forward as objections to amputation in the thigh in cases where the operation may be deemed absolutely necessary. If that dire proceeding must be, patients must take their chance. Surgery can never entirely avert the occasional necessity for amputation, but in the case for which I now speak I maintain that she frequently can. And now let us see the case of excision. The foot and leg are left; the limb is shortened positively by the length of bone taken away —say from two inches to four. Allowing for the loss of growth in length before operation, and for arrest of growth after the operation—say five inches, say nine inches; allowing even more, the lower end of the thigh, the leg, ankle, and foot still remain. It is worthless in surgery to compare a bad stump with a bad lower limb after excision. Take the perfection of a stump, even in the estimation of the most critical, and with even a medium limb after excision, and the comparison will not stand for an instant. With the best results, it seems absolutely absurd to compare the two.

In the general comparisons hitherto made I take leave to set aside the evils of excision, as drawn or indicated by the authorities already named, as exceptions to the rule, and as being equalled in evil in most respects by those following amputation; but I say unhesitatingly, that if the comparison is drawn between the perfect stump and the perfect result of excision, the comparison is just as unreasonable as that between an artificial limb and one of flesh and blood.

Inequality in the length of the upper extremities is of little moment, but it is awkward, to say the least of it, in the lower, as we frequently observe after fractures and after disease of the hip or knee in early life. Such inequality may, in some instances, be attributed to bad treatment, but it often occurs despite the best skill in surgery. Yet who would in such a result say that the patient would have been better with the limb away by amputation? Who does not think that when a person gets well of a diseased knee or hip, with shortening even to the extent of five or nine inches—no uncommon result, he is yet somewhat fortunate—fortunate in not having had amputation performed on his thigh? We do see occasionally cases of great distortion of the lower limb after disease of the knee, but even these patients sometimes congratulate themselves on having the leg and foot. In some few such cases amputation in the thigh has actually been performed years after the so-called cure. Yet in such cases it is not our custom to lay blame on the treatment which may have been adopted, although I believe that it has often been highly defective. Whatever the amount of distortion after the cessation of disease in the knee-joint, I hold that, excepting very special cases, amputation is unjustifiable, as resection of the distorted knee is both safer and better. But I shall not press this point at present; let me rather again draw attention to the fact, that we never cry out against either nature or the surgeon in cases of shortening and distortion of limbs after disease. Yet such defects are common. Whilst meditating these remarks, I have rarely known a day pass in taking one's ordinary rounds that I have not observed persons walking in the streets with shortened and distorted limbs after disease of the knee. Most of them have moved more nimbly, and with greater apparent security and comfort than if on the artificial limb after amputation of the thigh. Yet shortening has in a manner become the bugbear of excision of the knee. I admit that it is a defect, but abstraction or excision and arrest of development are evils elsewhere as well as here. Again, I admit that in this locality disparity of size, particularly in length, is an awkward circumstance. Let us see, however, in what this consists. A difference of three, five, or nine inches! What is the contrast which has been drawn with this defective limb? It is with its neighbour! And here I imagine we hit upon the weakest of all the objections hitherto made to excision of the knee. The risk of loss of life, distortion, uselessness of that which is preserved, are all serious objections or blemishes to this proceeding. A short leg to a long one is, I again admit, a defect; but in this respect surgery no more fails than nature does after disease. What, I ask, is the alternative for excision of the knee proposed by those who object to this operation? It is amputation in the thigh! I cannot allow that which might be an easy answer to the question,—Why perform an operation at all? Why not cure the disease, and thereby avoid amputation? That is a question of a totally different kind. I am not now discussing the question of amputation, or continued, and possibly other treatment, to save the limb. It is the question between excision and amputation as regard the future condition of the limb. In ordinary amputation under such circumstances, half the thigh, or possibly two-thirds, may be left. The body is mutilated to nearly the entire extent of one extremity. Say what you may as to the quality of the stump, there is left a shortened femur, a shrivelled thigh; emphatically a stump. Even Samuel Johnson's explanation of the term gives an exalted idea of the noun substantive which scarcely holds good with us: "The part of any solid body remaining after the rest is taken away," is a flattering description of one of our stumps of the thigh. It is in reality with us barely more than a peg whereon to hang an artificial limb. In youth, in middle age, in advanced years, it never improves. It never can be more than a shortened bone, with shortened and shrivelled materials around; and this even with the perfection of a stump. The defective results of excision I am disposed, in accordance with what I have said before, to class with defective stumps. In justice to the subject I now deal with, I take a fairly perfect result of excision. Whatever the shortness, that may readily be made up by a high-soled boot or shoe. There are left the lower end of the thigh, nearly the whole of the leg, the ankle and foot; the former two slightly damaged, the latter unscathed. The foot, leg, and thigh do as much as in the cases of distortion or shortening after disease; and who, under such circumstances, would compare an artificial substitute to the limb of life?

But I cannot leave the argument here. A well-healed stump never in reality improves, unless, possibly, it gets somewhat more callous, whilst often it gets more tender and irritable; but the seeming perfect result of excision at the end of six or twelve months (just when stumps are generally at the best) is no criterion of true perfection. If the limb is properly managed afterwards, it goes on improving for months—ay, for years. Without again discussing the question as to length, and without applying the remark to all, I can affirm, from ample experience in my own practice, that thigh, leg, and foot enlarge in bulk; and, in particular, that with this change the leg and foot improve in muscular energy. It may to some be more impressive when I say that the calf of the leg shows again in increased muscularity and vigour. This observation has never yet, I believe, been dwelt upon by those who have written of the good qualities of limbs after excision; but it is an important fact, and one which, in my opinion, goes far to balance that of shortening, which has been so eagerly put forward by writers previously referred to.

I do not think that the value of the human foot has been sufficiently estimated by those who amputate, or even by some who advocate excision. It is certainly as wonderful in its mechanism, if not more so, as any of the organs of special sense; and, without drawing a useless comparison between it and the hand, it is certainly in its entire state a thousand times more perfect, as part of the future support of the body, than the point of a thick stick, or any fabricated imitation of a foot. We see persons walking about with limbs shortened from various causes; some with high-soled boots, some with apparatus of iron, some with a pin of wood to make up the proper length, each with a foot of tolerable dimensions and vigour. Whatever we may say to grace or symmetry in these cases, we yet, under ordinary circumstances, consider that a fair compromise has been made with formidable disease. Even as an unfortunate maimed one who has suffered amputation in the thigh halts along, we may pity him as the victim of incurable disease, yet we claim his case as a bright illustration of the powers of surgery. The foot is rarely thought of, whether it has been swept away by amputation, or it be a portion of a shortened distorted limb. Yet I doubt if there is any substitute at all to be compared with it.

Time will not permit me to draw extended comparisons, and to illustrate the value of the foot. This sketch (fig. 53) shows a representation of Cæsar Ducornet,

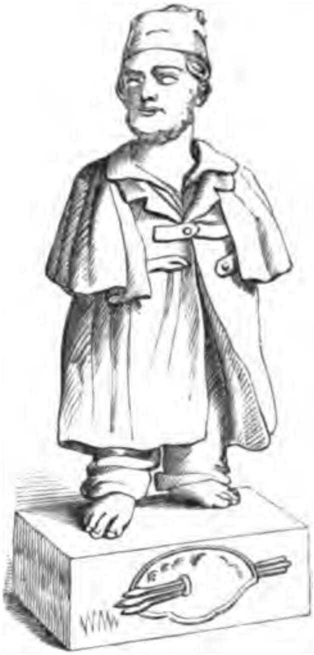

Fig. 53.

who was born without hands or arms, and with defective feet, having only four toes on each, yet he became a famous historical painter,* and with his toes wielded the brush more perfectly and to greater purpose than most of his contemporaries. But for a forcible example, I beg attention to the figure and skeleton of Hervio Nano, or Harvey Leach, in the museum of University College—for which sketches (figs. 54 and 55) I am indebted to the courteous permission of the authorities of that institution. The latter shows the bones of the head, chest, and upper extremities of remarkable development. The pelvis is comparatively weak, and the femur in each limb is scarcely, perhaps not, to be recognised. The right tibia and foot are very defective, but the left leg and foot are better developed, although far from being in due proportion to the trunk above. Although the feet are defective, particularly the right one,

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* See Leisure Hour, vol. for 1856, p. 566.

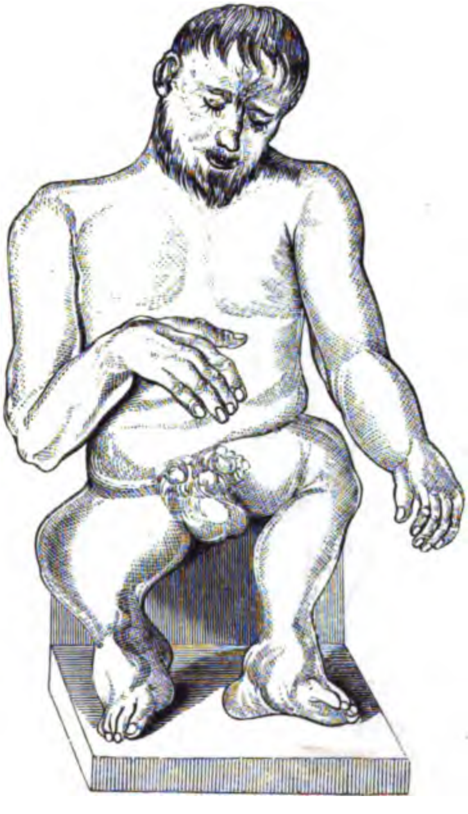

Fig. 54.

I call special notice to the fact that they were in life possessed of most wonderful energy and agility. Leach was one of the most remarkable gymnasts of his day. Notwithstanding the distortion of his lower limbs, he had marvellous power in his feet. As an arena horseman he was scarcely excelled, whether in sitting or standing. He walked and even ran fairly, and his powers of leap-

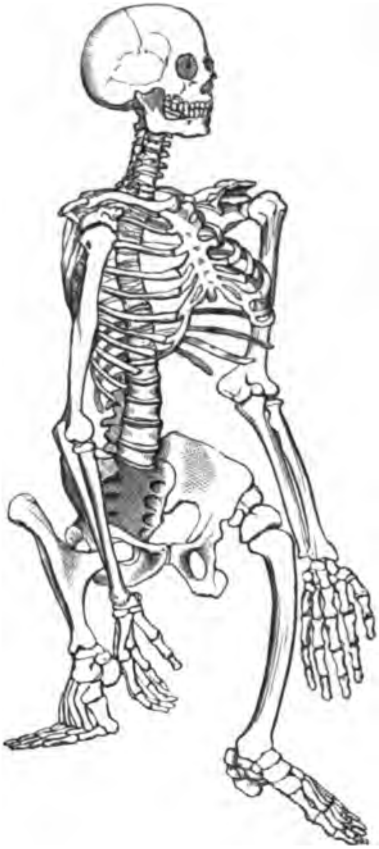

Fig. 55.

ing, partly from his hands, partly from his feet, were unusual; yet his lower limbs were so short that, as he stood erect on the floor, he could touch it with his fingers. This man earned his livelihood as much by the energy of his lower limbs as of his upper, yet, as you perceive by both the figure and skeleton, that energy must have been almost wholly in the feet. The length of the lower limbs on the skeleton is, from hip to heel on the right side, nine inches, and between the same points on the left about sixteen inches, showing a disparity of seven inches between the two. I deem it particularly worthy of remark, that the femur seems entirely wanting on both sides—a fact of peculiar interest to me, as I have dealt so freely with the bone at both its extremities. On the left side there are only three bits of bone, making about two inches in length; and on the right there is only one portion about the size of a chestnut. It may be observed, that whilst the tibia on the left side seems nearly normal in proportion to the rest of the skeleton, the right is three inches shorter, and more like an os innominatum than a human tibia. Yet, with all these defects and peculiarities, the energies of the possessor were remarkable. His power in these limbs was chiefly in the feet. Without these members he would have been incapable of those efforts which struck thousands with amazement; but if one of his feet had been wanting, he could not possibly have done what he did. One foot added to the vigour of the other, and each was in that degree of perfection as to enable its master to do such things as people with limbs of ordinary mould usually dare not attempt. Surely he will be a sceptic indeed who does not allow that in this instance the foot was the grand feature in the lower limbs; and my object in bringing the illustration forward on such an occasion as this is, to show the importance of this organ in regard to its function of bearing the weight of the body above. Look at those who walk with limbs distorted and shortened from former diseased knee or hip, who bear upon a support three, six, nine, or twelve inches long—and get on well, too—and think what their powers of progression might be if without the foot! No doubt some with stumps in the thigh have walked marvellously well: I have known one in this predicament walk ninety miles in three consecutive days; but these are exceptions to the rule, and they present the very best examples of stumps.

The object of these remarks is to draw attention to the value of the foot, whether it comes directly in contact with the ground, or is the point of attachment for something to make up the proper length of limb on that side. In an anchylosed knee the foot is of great importance in progression. Besides the mechanical construction of the foot, its comparative size is of enormous value as a support; and what tissue of a stump in the thigh can compare with that of the sole and heel of the perfect foot?

But I feel almost ashamed to carry this argument further. Persons out of our profession would think it strange to hear an argument in the College of Surgeons to show that the possession of a healthy foot is better than the absence of a foot; that a foot, leg, and lower third of the thigh, all free from disease, are better than nine inches only of a shrivelled thigh; that a nearly whole limb, two feet or two feet and a half long, is better than a shortened and shrivelled thigh which measures some nine or twelve inches from the hip! Yet such is the seeming argument to which I have been forced, for those who have opposed the operation of excision of the knee have almost invariably represented a good stump, as it is called, as superior to any limb preserved by such a proceeding. My own impression, however, is very different. I cannot say of a single instance coming under my own observation, that amputation would have been better. I am not here to say that excision must invariably be superior to amputation; but this I will say without hesitation, that however short the limb may be after this operation, the parts preserved, provided the original disease is cured and no special or great distortion be left, must be beyond measure superior to the best stump that can be made. I care not whether the limb may be five or nine inches shorter than the other; my impression is, that were the femur so much diminished in length by cutting and by want of development that the foot on the damaged side should actually be above the level of the sound knee, its presence would ensure a better support than a stump of the thigh. I thus admit and take what may be considered an extreme case, such as has never yet been brought forward, and such as is likely to occur rarely, if ever. I do so to meet the exigencies raised by Messrs Pemberton and Humphry, and particularly to meet the all-important question as to the propriety of performing this operation on young persons in whom the bones have not attained their full length. The reasoning—if such it may be called—on this question has been remarkable. It amounts to this: that as the limb does not grow after this operation in young persons in proportion to the rest of the body, particularly in proportion to the other limb, it should not be performed; for this want of growth, great or small, is an insurmountable objection. Yet, as I have shown, the shortening is likely to be as great after a tedious recovery extending over years from disease of the knee in early life. For example, look at this leg and foot, and compare them with the other (referring to a cast). These shrivelled parts are the result of disease. But that is, indeed, a favourable acceptation of this objection; and, to say the truth, it is not the view taken by those to whom I refer, nor is it a view which I myself admit for a moment. The question is not in such cases between excision and the cure of the disease: it is between excision and amputation. I take it for granted that, with few exceptions,—some of which I shall allude to ere long,—excision has been performed only in instances where amputation would otherwise have been the operation—instances where further attempts at cure were deemed likely to be useless.

That amputation, under such circumstances, has been a common practice—in fact, the rule of practice—every one who remembers what surgery was thirty years ago must admit. Now, it is in such cases that some opponents of excision of the knee have said that it cannot be done, that it must not be, because the limb does not grow afterwards, or because it grows shorter! Mr Edwards and others have shown that the limb does grow in length after the operation. I can testify the same from my own personal experience. I admit that in some cases it may be less than in others; but I maintain that, however little, the preserved part of the limb must always be better than none. The leg and foot must always be better than any artificial substitute. The case related by Mr Pemberton, on which so much stress has been put, and which, in as far as I can perceive, has been held as the grand bugbear against this operation, was by himself and colleagues condemned to amputation. With wise consideration, however, in my opinion, he selected excision. Without following all the interesting particulars of this case, I deem it sufficient for my present purpose to give Mr Pemberton's own description and figure (56) of the state of the limb some six years afterwards:—"About the excised joint the parts were sound, and free from pain on manipulation, a very movable ligamentous or fibrous medium connecting the articular extremities. Notwithstanding the shortness and the flail-like joint, it was astonishing to see the power he possessed of extending the leg, and of bearing the entire weight of the body on it in walking, unaided by support of any kind; and it was quite clear that the disparity in length alone prevented him from realising all the advantages that he might under other circumstances have obtained from the operation. With all these drawbacks, he works hard as a boat-builder, the limb being aided by a cork sole of some six or seven inches in height, and by a leather case at the knee."

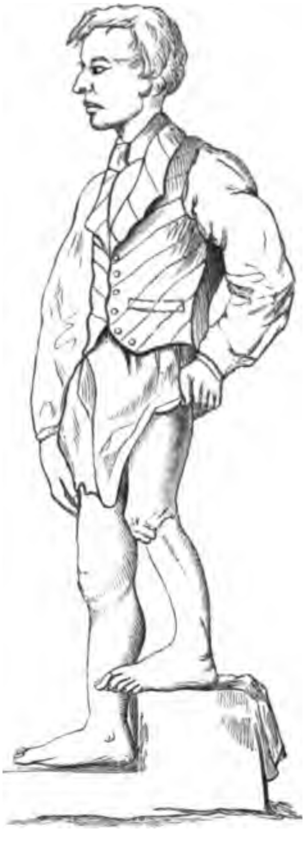

Fig. 56.

No one would presume to call this limb equal to one untouched and from the hand of nature; but my own impression is that it is better than the best ever fabricated by the hand of man. There is no accounting for taste or even opinion, however, and here is what Mr Pemberton thinks:—"The limb cannot be deemed otherwise than an incumbrance, and with the best appliances to remedy the want of length, proving, after all, little better than a sad deformity." Now, the alternative in this instance was a stump with a crutch or an artificial appendage! It may be a matter of taste amongst the victims of disease, and even amongst ourselves, which would be best. My own choice is strongly in favour of flesh and blood.

The features of hæmorrhage and of shock in this operation I think scarcely worth notice on such an occasion as this. In some few cases there has been trouble from oozings for hours after, and an articular artery has now and then given trouble. In one case I have seen severe shock in a weak child; but under any circumstances I deem these matters of less magnitude than in amputation in the thigh. The main artery of the limb is untouched, and the worst form of secondary hæmorrhage can never occur.

The want of bony anchylosis has been much referred to as a serious objection. I certainly think it best when it occurs, and it rarely does not if time be allowed. But even without it the results may be entirely satisfactory. You have heard what Mr Pemberton thinks on the subject in his famous case. I think it but right to say that one of the best I have had was where bony union did not occur; and I have seen a person on whom Mr Partridge operated, under very disadvantageous circumstances, who nevertheless made a good recovery, and who, without anchylosis, can carry a sack of flour on his shoulders weighing two hundred and eighty pounds, and can do readily the ordinary work of a journeyman baker.

In my own early aspirations regarding this operation, I always kept amputation in reserve as the last resource, either at the time of excision, or weeks or months afterwards; but my views in this respect have been considerably modified. I prepared myself to meet with failures at every stage; and then, as I thought, the patient, if not slain outright, could but submit to amputation. Such a view as this was extensively acted upon by Dr Humphry, for of thirteen cases amputation was performed in four instances, happily all recovering. But I have since altered my opinion considerably on this point, and now look upon amputation as a step rarely to be anticipated in such cases. I can conceive it possible that a seeming necessity might arise at the moment of excision to resort to amputation: I have taken this step twice myself. But in instances where all does not go on well afterwards, instead of taking fright or losing heart at an early period, I ask for time; and when that does not suffice, I believe dealing freely with the wound, opening sinuses, clearing away strumous effete material, picking away loose necrosed pieces of bone, gouging away bare material of the kind —ay, even opening up the whole surfaces, and sawing off fresh pieces of bone—to be better than amputation. To do all this, particularly to repeat excision—to perform resection, as it may with propriety be called—seems an admission of failure; but it is no more so than having to repeat an original amputation of the thigh, as has frequently been done. The results are or may be very different, however, for there is still the limb left to compare with the abbreviated stump.

There is more, however, in these words than may appear; for I do not speak from theory, but from actual experience. In October 1862, Jane Bolton came under my care in King's College Hospital to have her limb removed, after unsuccessful excision of the knee. There was no ossific union, and a considerable portion of the lower end of the femur protruded through a large opening in front of what remained of the original knee. Fig. 57 represents the limb. Bearing in mind what I had occasionally done in cases of unsatisfactory results of excision at the elbow, I opened up the parts, took away the projecting portion of bone, trimmed here and there, and ultimately succeeded in getting a sound cicatrix (fig. 58), a perfect anchylosis, and a limb so strong that although shorter than its fellow by several inches, the patient was delighted with it; yet when she came to town, and for months even after the second conservative operation, she was anxious that amputation should be performed. I have since repeated similar operations with the most satisfactory results, and as a general practice I decidedly recommend it in preference to amputation, as the secondary alternative.

In many instances of so-called cure of disease of the knee the limb is left shortened, bent, flaccid, useless;

and the body is borne on a crutch. In all such cases, when the usual modern means of extension have proved of no avail, surgery has heretofore held out no alternative between a crutch and amputation. When patients are discontented—where amputation has often been requested and frequently performed, to give riddance from a useless member—I can testify by experience to the excellent results of excision. By removal of the stiffened or anchylosed articular end of the bones the limb has been stretched; a treatment like that for compound fracture has been adopted; union, new anchylosis, has taken place, with the limb in a proper line; and a comparatively useful member has been the result. This proceeding emanated from excision under

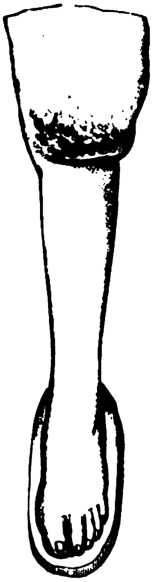

Fig. 57.

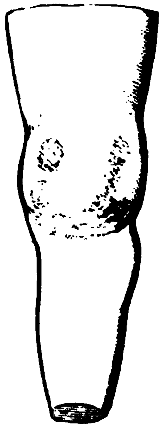

Fig. 58.

the ordinary circumstances of disease. It was a bolder idea than that of Barton, who recommended that a wedge-shaped piece of the head of the tibia should be removed in certain cases of bending and anchylosis after disease of the knee; and it was carried out for the first time, I believe, by Mr Price, whose enthusiasm was equal to if not greater than my own in regard to all pertaining to this operation. The patient (whose condition is represented in fig. 59) unfortunately died, from inflammation in the chest, induced possibly—probably—by the operation; but I have had repeated experience since to prove that such a proceeding is pre-

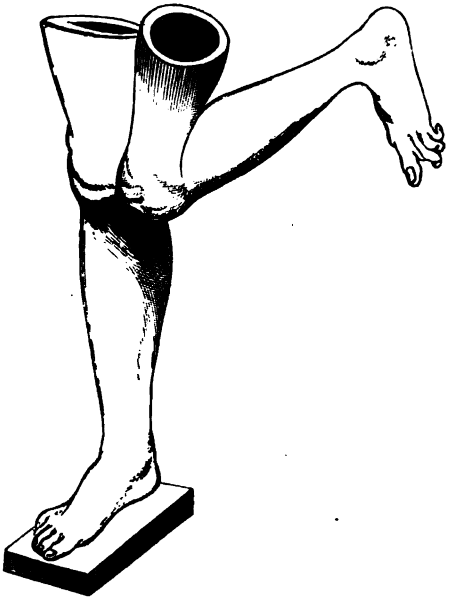

Fig. 59.

ferable to the so-called "complaisant" or "expedient" operation of amputation, where a person is tired of carrying about a useless appendage, of no value to the holder, and of no credit to the art or science of surgery. Here is a fair example of the kind. A lad carried a limb bent at right angles, thus (fig. 60), and walked laboriously on a crutch. Excision was performed. Things did not go on so well as I expected. Twice afterwards I had to renew the incision, and saw fresh surfaces on the bones. About twelve months afterwards he left the hospital, with a loose, dangling leg. But by-and-by anchylosis set in, and here is the preserved limb (fig. 61). It certainly cannot stand comparison with the other limb, but it contrasts favourably with such distortions as these (referring to fig. 60 and other similar cases); and as a proof of its vigour, the youth recently walked twelve miles to see the Derby run. In a race himself he would no doubt be an "outsider"—worse than "dark;" but the leg is better, in my opinion, than a crutch. Here is another example, which was treated in the same way, and a leg like this (fig. 62) was the result of one operation. In

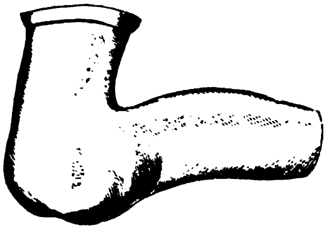

Fig. 60.

a jocular strain, I sometimes liken it to the much-admired lower limb of the Apollo Belvidere.

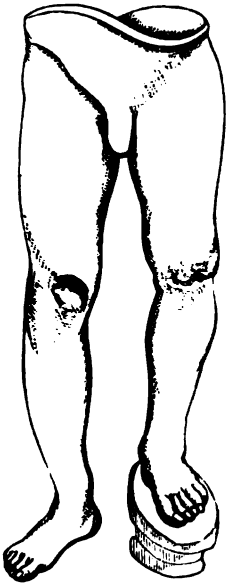

Fig. 61.

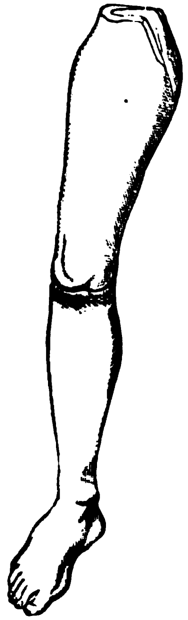

Fig. 62.

But I have already dwelt longer on this subject than present time warrants, and the hour tells me that I must give up. There are still many matters associated with it which I should wish to refer to, and, possibly, I may take another opportunity to aid in bringing out all that I consider important with regard to the great surgical question to which I have directed attention in these two lectures.

The question has now been so extensively and so variously handled by the different authorities whom I have quoted, that I cannot pretend to much novelty in my present dealing with it. If I estimate my own attempt rightly, it has been to show the superiority of a leg and foot of flesh and blood to any artificial substitute—of a foot and leg, whatsoever the shortening, whatever the "arrest of development," to a stump of a third, one-half, or even two-thirds of the length of the thigh. Here are representations (fig. 63) of the best artificial limbs that can be made. Here is a limb (fig. 64) after excision of the knee. Here is a stump (fig. 65) after amputation in the thigh. "Look upon this picture (fig. 63), and upon this" (fig, 64); "look

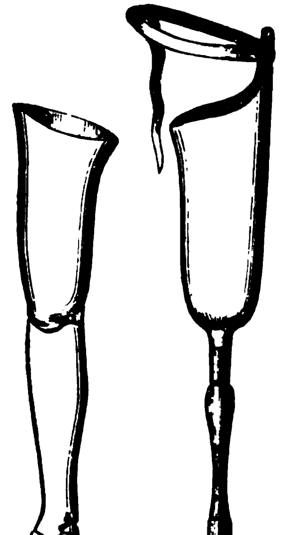

Fig. 63.

upon this picture (fig. 65), and upon this" (fig. 61),

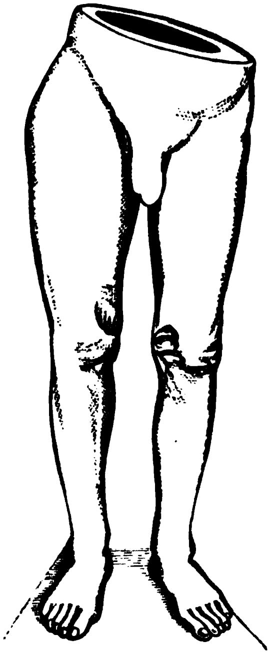

Fig. 64.

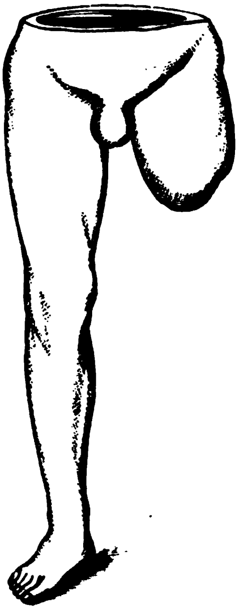

Fig. 65.

or this (fig. 62), or this (fig. 64), and I ask your verdict !

LECTURE VII.

ON MINOR SURGERY.

Mr President and Gentlemen,—Again I have the honour of addressing you as your Professor of Human Anatomy and Surgery. On a similar occasion last year, when I began the duties of this chair, I referred to the difficulty of selecting subjects wherewith to attract the attention of such an audience as might naturally be expected within these walls. I cannot say that time and experience have lessened the diffidence I then felt. As knowledge has increased during my professional experience, I have become more and more sensible of the magnitude of the task which the surgeon undertakes who ventures, besides engaging in practice, to assume the duties of a teacher. As in many other departments of life, knowledge with us, when wisely used, tends largely to demonstrate our comparative ignorance, and my own brief experience in this chair has impressed me more forcibly than ever with the responsibilities pertaining to such an office. Whatever the amount of individual knowledge, it falls so far short of that possessed by numbers, that he who aspires to stand even if only a step higher on the ladder than many of those around him must needs be careful how he holds himself in his exalted position.

These remarks follow naturally from my experience of last year. Feeling at that time that I had little to say different from that already familiarly known in surgery, I am now aware that my resources are diminished to the extent of my last course of lectures. The field of my own knowledge is thus far exhausted, and now I have to see in what way I can best fulfil my duties this season, both to your satisfaction and my own.

During the preparation of my lectures for last year I was pressed to give a name to their scope, and perceiving that in detailing part of my own personal experience I was dealing somewhat largely with that of others, who were my contemporaries, or had immediately preceded me, I ventured to announce that my lectures would be "On the Progress of Surgery during the Present Century." It was perhaps a presumptuous title; but I could see none better at the time, nor even now can I think of one more appropriate. I felt that I was dealing with my own life in surgery. I could not refer to my own labours, such as they had been, without referring to those of others. A variety of circumstances, many possibly fortuitous, had given me a prominent place in my profession,—need I say more than that I had been selected your Professor of Surgery?—and I thought it better, instead of saying "the life and times" of your humble servant, to say that my lectures would be on the progress of surgery during a period in which I had dealt largely with it myself.

Every one has his own views as to how such a theme should be treated. I thought I had guarded myself sufficiently in my introductory lecture, by stating that I should select only such subjects as those in which I had been specially interested, on which I fancied I could speak with some authority. I neither felt willing nor even competent to take up all departments in surgery; and, above all, I was more anxious to refer chiefly to my own personal experience than to give a reiteration of what had been already said and published by others. Instead of working a subject to exhaustion, I preferred touching the salient points, particularly those which my humble judgment led me to suppose might be of greatest interest to an assembly of men already familiar with the ordinary aspect of surgery.

The details of the progress of surgery in the nineteenth century are not to be worked out in such lectures as these. In number and minuteness they would pall upon the audience; and even as a professor writes or speaks, things are going on or transpiring around which show the difficulty of keeping pace with the onward progress of our profession. John Bell denied the possibility of stemming by external pressure the flow of blood through the common femoral artery; yet how time has altered the *dictum* of that great genius in surgery! To say nothing more at present regarding the efficacy of pressure in a variety of ways and places, it is worthy of passing remark, that in modern days the possibility of usefully compressing the abdominal aorta has been recognised. Professor Lister of Glasgow has signalised himself in this respect, so that Professor Syme was enabled to cut into a great aneurism in the pelvis, and apply ligatures to the main vessel with the most happy results; and within the last twelve months we have become familiar with the fact that iliac aneurism has been cured by compressing the aorta. We are indebted to Dr Heath of Newcastle and Dr Mapother of Dublin for these remarkable cases; to Dr Murray, also of Newcastle, we owe this idea, besides the demonstration, that actually aneurism of the abdominal aorta itself may be cured in a like manner.* Even the recent combination of anæsthesia and pressure in such cases is a vast stride in modern progress. Nor can I omit allusion to the great fact, that within the same period a successful case of ligature of the innominata has occurred in the hands of Dr A. W. Smith of New Orleans—another surgical triumph of our Transatlantic brethren, and a living tribute, in a double sense, to Valentine Mott, who first had the courage to resort to that bold proceeding,† and who was happily spared to advanced years to hear of the realisation of his grand conception.

Certain omissions last year, which resulted from necessity, have in some degree been made good by the kind interest of those who honoured my lectures with their criticisms, and others I may possibly compensate for in future. In justice to myself and those who shall follow me in this chair, I think it right to state what I consider a great difficulty associated with these lectures. Six are expected, and each must be in itself, as it were, complete. One may be a sequence of its predecessor; the whole may pertain to a single subject; but each must have a beginning, a middle, and a well-rounded finish, else woe to the unlucky professor. Now, at first sight, it may not appear difficult to effect all this; but here is the rub—the audience are almost as stringent as *Portia* with the Jew's proposed pound of flesh. The " bond" is for a sixty minutes' lecture. If, in taking execution, the professor falls short of or exceeds the stipulated hour, he well-nigh incurs penalties little less than those which encompassed the unhappy *Shylock!* I confess that I have had more trouble on this score than with most others; but, like that implacable old man, I have been somewhat indebted to the leniency of the court when I have infringed upon the strict letter of my " bond." I find no fault with this custom; on the contrary, I think it good, although I may still have to trust to your indulgence to spare me a few extra minutes; for with the subjects we treat of here it is indeed difficult to hit off, to the satisfaction of all, everything, and yet not fill more than the rotundity of sixty minutes of time.

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* See Medico-Chirurgical Transactions, vol. xlvii. 1864; and Medical Times and Gazette, 15th April 1865.

† The Pacific Medical and Surgical Journal, vol. vii. 1864. Related by Dr D. L. Rogers; also Report of case by Dr A. W. Smith, New Orleans:—Common carotid tied at same time; vertebral artery secured a month afterwards for secondary hemorrhage.

But now to the proper business of the day! Leaving for the time such grand themes as aneurisms and great arteries; professing for the day to say little or nothing regarding what has fancifully been called "capital" surgery, I propose to be so bold as to read to you a lecture on some matters in "Minor Surgery," as the phrase goes. "What!" I suppose some of you may mentally exclaim, "more about little matters, after all that was said last year regarding split lips and split palates, and lithotomy for little stones on little children!" Even so, gentlemen. I am of opinion that little things constitute the bulk of surgery. Mr Abernethy did not think it beneath his dignity to describe the making of a linseed-meal poultice; Sir Benjamin Brodie wrote upon corns and bunions; and I know first-rate physicians who delight in giving instructions for getting up the best beef-tea for their patients. An ingrowing eyelash may destroy vision; a margin of toe-nail may cause lameness as effectually as a gunshot wound in the thigh; and what is "minor" in one man's estimation may really appear great in another's. Intrinsic value is that by which estimates are mostly formed. Were we to look to this style of estimate here, we should find that one of the smallest of surgical operations has been most largely remunerated. We all know how varied the payment has been in regard to the little operation of vaccination. Its price has run from *nil* to L.10,000 and a title. But *nil* has a large account in the Bank of Science, and it is of vast importance that the work should be as well done as if filthy lucre were the only reward. Parish doctors, poor-law surgeons, even those in public hospitals, deal largely with this fancy bank; and it is the glory of our profession that the pauper whose case we undertake commands our sympathy and calls forth our skill as much as might the wealthiest citizen.

For my own part, I cannot recognise the true practice of surgery without a due appreciation of so-called minor matters; and, professing as I do to be more or less conversant with surgery in its minor details, as well as in its bolder and truly rugged aspects, I think it not at all inconsistent with my position here to say something of comparatively gentle surgery, particularly as a contrast with the huge and coarse operations of amputation in the thigh, and excision of the knee, of which I treated in the lectures I last delivered in this theatre.

The simplicity of dressing a wound, of dealing with an open surface or sore—which I alluded to in my last course as being characteristic of modern surgery—may be viewed in various lights and aspects. The simplicity of the application and the simplicity of manipulation both deserve notice, particularly as each in perfect surgery is regulated by a due appreciation of nature's powers and of the influence of time. Never, I believe, in the history of surgery was there less faith in applications to wounds and sores than at present. Our trust now is chiefly in nature; and unless there be a regulating power from within, we know that we can do but little either to restrain or excite. The efficacy of our simplest applications may often be questionable; and those which stimulate I feel certain often do more harm than good. Nothing, I fancy, can be simpler than lint and water. What can be less irritating than lard or simple cerate? Even these are set aside by some of our ablest practitioners, such as Dr Humphry of Cambridge; and literally nothing is applied to some of the largest wounds we have to deal with. To be sure, in accordance with custom in this country, the surfaces are held together by stitches until nature effects the permanent union; but in such an instance these are only mechanical aids; they are like the splints with which we keep steady the fragments of a broken bone. The contrast between heaps of dressings on a stump of the thigh and nothing at all is certainly remarkable. All that some aim at is merely to keep surfaces in contact, and from molestation—even from the weight of bedclothes. In as far as actual union is concerned, this is perhaps the best and most philosophic view to take. Yet evil may actually arise from such excess of simplicity. It is hardly possible to guard against external influences, either from around, or from the incautious or irregular movements of the patient. Hence, in many instances, such a style of dressing, with straps or bandages, or both combined, as shall give most security against such evil influences, must be allowed to be the wisest course. Yet again I say that these are only mechanical appliances; but where they are accurately adapted their utility is beyond doubt. If an ointment is used in such a case, it cannot possibly be of any service except to facilitate the removal of outside coverings. I here refer to ointment as being one of the simplest applications; and whatever virtue may be claimed for any special compound of the kind, its influence cannot extend far. Water must have a more extended sphere of action, for if prevented from evaporating, and regularly applied, all around must be kept more or less moist. The temperature of a considerable substance of tissues may be materially modified by water. Wet cloths, if applied only at a first or single dressing, I count as nothing in what I am now referring to; but if cold water be frequently renewed without special covering, or if evaporation be prevented by oiled silk, the temperature may be kept considerably below the natural standard, or possibly somewhat above; although on these points I do not think that we have much precise knowledge. Notwithstanding some assertions to the contrary, I believe that most of us have the impression, that whilst adhesion at a wound is being effected there is present what Hunter called "the adhesive inflammation;" but I am not aware that it has ever been demonstrated that a slight fall or rise in temperature has much, if any, influence on that process.

I refer to this subject at present chiefly to question the supposed beneficial influence of even so mild an application as water, or of simple ointment, in regard to the process of adhesion. If only this process be aimed at, I believe them to be utterly useless. They have no healing influence whatever!

But in the majority of wounds, even when we talk of adhesion having taken place, some points here and there do not unite; and these must then do so by the more tardy processes of suppuration and granulation. If ligatures have been used to arrest hæmorrhage, and the ends are left out, suppuration and granulation must of necessity occur. And here, I believe, complicated and compounded dressings are equally useless. Ointments, even the most simple, are, in my opinion, of value only as permitting the more ready removal of soiled dressings; but water, in such cases, I consider of singular worth. If moderately cold, it may keep down temperature—possibly prevent accumulation of blood in the inflamed parts; and in both ways, or by some other influence on the nervous system, give at least comfort to the patient's feelings. I believe the theory a sound one, that moisture and warmth tend to promote suppuration; and when this process is once fairly established the patient generally has considerable relief, both from local distress and general fever. The old-fashioned poultice has been largely displaced to make way for the more elegant dressing of wet lint covered with oiled silk, or for the "spongio-piline," which serves similar purposes. In my daily experience I am often asked if water used thus should be hot or cold. I answer that it is of little or no consequence, as in either case the water will speedily acquire the temperature of the surface on which it is placed.

But it is with palpable open surfaces that there is the greatest variety of dressings, and perhaps variety of opinion as to the specific agency of compounded dressings. For a simple excoriation or abrasion not larger than a pin's head, to those enormous damaged surfaces from scalds or burns which may cover half the body or more, there have been compositions recommended which I have neither time nor inclination to enumerate. All have been vaunted; all men of experience have seen most of them tried. Patients have died during, though not from, their application; and surfaces have been healed under all such varied agencies. Fluids have been used, from the blandest—say thin water-gruel—to solutions of various irritating, even caustic salts, or to spirit of wine or of turpentine. Powders, from simple flour to that of carbonate of lime, oxide of zinc or of resin, have had their advocates. Oils, from sweet oil up to turpentine, have been extolled; and an envelopment of cotton wool has been in certain instances considered all powerful.

Here it appears as if our resources for good were unlimited. With so many applications for open surfaces, each having been extolled in its time as beyond all others in utility, does it not appear as if we possessed the most precise power wherewith to heal as it were at command? Yet how often do we see the highest skill seemingly baffled! And does it not appear evident that the man of experience is generally indifferent as to which application is used for a time? The reason of this, I believe, is, that when out of scholastic bounds, and reasoning for himself, he is not impressed with confidence in those specific virtues for which certain applications have been extolled. For my own part, I have long come to the conclusion that many of those agents are positively injurious, and that when healing actually takes place under their use it is in despite. There is a power within the body itself which works for good irrespective of such injurious appliances. No doubt, in some instances, a gentle stimulant in the shape of lotion or ointment does good; but in the majority, if nature be left to herself, she will effect cicatrisation in proper time—a time over the duration of which we have but little control. From what I now say, it might appear that we have actually no power or influence in the management of such cases. But I am far from implying this; on the contrary, the utmost skill may be displayed, the highest success achieved.

A horse may be on his legs for months without seeming to suffer in any way; but man cannot sustain the erect posture beyond a brief period. His nervous and muscular systems need rest, and, above all, the vascular system requires such changes of position as shall contribute to its integrity. The upright tubes, arteries, and veins, between the heart and feet, require rest at brief intervals, that the strain upon their tissues by the ever-flowing streams of blood may be relieved; and if there be neglect regarding this, loss of tone, to say the least, must be the result; and when tube tissues suffer—I mean the substance of vessels themselves—other tissues suffer in proportion, and this is especially marked in the cellular tissue and skin of the lower limbs. Such loss of tone, loss of vigour, loss of health, occurs more readily in some frames than in others; but the strongest—that is, where the relative vigour of tissues is perfect—must suffer, and hence the frequency of open sores on the skin in the lower extremities of men who are much afoot, and in particular in those who have already had inflammation, or a disordered state of the circulation, in the lower limbs. Now, it is here that skill and knowledge tell with such marked effect. Doubtless man's ordinary instinct would in most instances be of service here. If he had it in his power he would lie instead of stand; but whilst seeing the good effect, he might not be able to give that physiological reason for it which we so readily appreciate. Now, so great is the loss of tone in many cases that even the horizontal position will not rapidly restore the just equilibrium. The blood-vessels, particularly the veins, have so lost their normal elasticity that they do not act as in perfect health. A little gentle pressure with a roller round the limb, say from foot to knee, will in the majority of such cases prove of essential service in giving that support against the ever-acting force of the heart and blood which for the time makes up for the loss of tone which I have supposed. Here rest, attitude, and support, enjoined on scientifie principles, and with due regard to the health of the system otherwise and elsewhere, are agencies which we have largely at our control, and which the practitioner uses in accordance with his acquired skill—a skill which in some individuals seems enhanced by what may be called instinct.

To struggle with nature successfully implies well-nigh the highest scope of surgical power, but it is equally creditable to aid her; and whilst we all aim at doing so to the best of our knowledge, and as we have been taught by rule, my experience leads me to say that we often err greatly. I mean it as no disparagement to young practitioners when I say that possibly they are most to blame in this respect. I attribute this, however, chiefly to their education. In lectures and professional books the same thing is told over and over again, generation after generation. Many lecturers and authors deem it a sort of heresy if they omit stating what their predecessors have said or done, particularly if a good sounding name can be introduced. Much has been said in error and enthusiasm by those who have gone before us; just as much is said and done in the present day under similar influences. It is human nature that such should be. Yet it is unfortunate that those in foremost places should think so little for themselves, and be content with retailing at second-hand that which a little reflection, founded on experience, would speedily show to be faulty. Statements which have got into books—into print—imply a great deal in the estimation of some; and these, though perhaps founded in error and hurry, have been transferred from one to another until lecturers and authors have considered them so stereotyped that they have become afraid to omit them lest they should be charged with ignorance. Bold thinkers are largely required in our profession, even though in their work, whilst clearing chaos and upsetting palpable errors, they may themselves produce some mystification. One original thought or fact is worth a thousand stereotyped fallacies.

Here I shall venture on delicate ground, and call attention to the present therapeutic character and use of mercury. Have diseases so changed that this powerful drug and poison is no longer required? Granting some such changes, is it not the impression of the middle-aged and the rising, that the virtues of this medicine have been greatly overrated, and that in a large proportion of cases its use can be entirely dispensed with? Has there not been some error, some fallacy, here which thoughtful men in modern times have well-nigh set aside? Let me give a surgical illustration, which I shall draw from my own experience, and for which I shall take the responsibility.

I believe I am right in stating that the opinion is almost universal that children are peculiarly liable to convulsions after operations. In one of my lectures last year in this theatre, I referred to considerable personal experience with such subjects; and in departments in surgery besides those spoken of, I feel entitled to say that I have performed probably as many operations as most of my contemporaries, yet throughout my life I have not seen a single instance of convulsions produced by operations. There is scarcely a surgical book in which the subject is not referred to, and the high authority of Sir Astley Cooper is often quoted in corroboration. Now, I do not doubt that Sir Astley may have seen such a result; but I have no hesitation in stating that the occurrence is so rare that, instead of forming the ideal rule, it should be held as the exception. One, or several examples of this kind occurring in a life-long experience should have no more influence on the general question than if we endeavoured to demonstrate that because every now and then men are found dead in bed in the morning, the death of all must be the same.

The loss of confidence in much-vaunted remedies seems, in some respects, like a loss, or diminution, in our appliances—an abstraction from our powers, as it were. But in my opinion the correct view to take here is, that we are acquiring a knowledge of our own ignorance—that we are beginning to see that we have placed our faith erroneously; in short, that we have been taking honour to ourselves for that which has been justly due to nature. We begin to see the difference between blind empiricism and natural processes.

An astringent lotion—say a solution in water of sulphate of zinc, two or three grains to the ounce—is by most of us deemed well-nigh specific; and so it in a manner seems to be when a sore is rapidly approaching the last stage of healing. The same may be said of various solutions and ointments. Yet dare one of us affirm that had water only, or dry lint only, been applied, or had nothing been used, the sore would have been an hour later in healing? Yet so strong is faith in these applications, that the practitioner just emerged from the schools is apt to take what he thinks will be the most rapid course, and so astringents are resorted to at once, and thus a raw surface is so teased and irritated that nature takes twice the time to do her work of repair. A sore which, if let alone, or covered by some simple only, would have healed in a few days or weeks, may be so fretted as to endure for months. It must have frequently fallen to the lot of seniors to be consulted by patients and practitioners about sores which seem to have baffled all skill and every sort of application, and when the advice has been given to apply simple water, a bit of wetted lint—to do, as it were, nothing at all—the sore has rapidly healed. I know of no stronger test of confidence in my own humble skill which I ever incur with those who consult me than when, visit after visit, with reference to slow-healing sores, I say, "Go on with wet lint, if you please!" Yet I fancy it is the right course both for the patient and for surgery. Occasionally some, under the impression that nothing is being done, will cling to the mysterious-looking black or yellow lotion—to the so-called specific alterative; even a month of slow poisoning with mercury may be preferred to the *laissez faire* system; but the generality of patients are satisfied with a reasonable explanation.

I am here, however, on the borders, as it were, between physic and surgery; and as the latter is emphatically my theme, let me take some illustrations which belong more positively to that department.

From what I have stated it may be inferred, and with justice, that I object to much interference with nature's ways so long as they appear to bear in a satisfactory direction; yet there are many instances in which non-interference equally displays the absence of good surgery. Thus to leave a foreign substance in a wound, when it can be extracted or removed with less risk than is involved by its presence, may be considered bad surgery. Injudicious interference is to be reprobated; but when a wise application of surgery effects the removal of a decided evil, the act is one of good practice. Let us take an instance of very common occurrence—where a bit of dead bone lies in the body within reach of the surgeon, not only dead, but actually separated from the living tissue. This may be a case where fragments of bone have been deprived of life by an injury, or where disease has killed the part. So perfect are nature's ways in some such cases, that she moves the dead part until it literally falls from the rest of the body, or is thrown off its original axis, and thrust lengthwise through a narrow track. I have seen a sequestrum of the whole thickness of the femur turned nearly at right angles to the original line of the bone; so far pushed from the thigh, too, that the surgeon had only to take hold of the projection with his hand, and pull it away by a force scarcely more than sufficient to lift its weight. But it is a great error in surgery to suppose that nature will always do her work in this way. Often she seems helpless for further work than mere isolation; actually she may speedily envelop the dead bit of bone in such a way that even the mechanical powers of the surgeon may fail to accomplish extraction of the offending part. Now, I greatly fear that it is a common error to rely too much upon nature in many such cases. What with soft tissues, possibly with hard, even with isolated parts, it may be fairly hemmed in, and, unless interfered with, may lodge a lifetime, and be all the while a most offensive and distressing occupant. It is in some such cases that we see great triumphs in our art, the triumph being enhanced by a display of science and skill which only the instructed can perfectly understand.

The engineer's or miner's work of sinking a shaft or a counter-shaft is not more scientific than an exploration in pursuit of fluid and extraneous material; and in my opinion there are few things in practical surgery more striking than the sight of the surgeon extracting dead bones through a track where matter only had flowed before; and still more so when he cuts at a considerable distance from the apparent seat of disease through seemingly healthy tissues, and removes a portion of dead bone, a bullet, or other inanimate material, which may have been the cause of suffering for months or years. The counter-opening of the surgeon is generally a scientific proceeding, and one which often displays consummate skill. Now, I believe that there is often needless delay in extracting dead bone. After separation is complete it should be forthwith removed. No good can possibly result from delay, but much harm may; for, besides prolonging a source of exhaustion, there will in certain instances be such a formation of new bone that the mechanical powers of the surgeon may fail to make way through it. Notwithstanding the palpable nature of many such cases, I have often been astonished at the seeming want of judgment and skill on the part of the surgeon. Internal remedies and external appliances have been fruitlessly used—improperly used, I may say, for all that was required was a simple application of the surgeon's hand, with suitable instrument wherewith to remove or extract the offending part. Not long ago I saw an instance of necrosis of the clavicle about midway between its extremities, resulting from erysipelas and abscess. The patient had been brought from a distant country for assistance. The original inflammation had long since ceased, and there was only a small opening or sore over the dead piece of clavicle. Now, in this case the practitioner in charge had latterly trusted entirely to the supposed efficacy of a plaster of a waxy and resinous composition. So thickly was it laid on (spread upon leather, and made to cover the clavicle, part of the arm, and scapula) that some considerable time was required, with a free use of turpentine, to clear all away so that the parts could be properly examined. It was then readily perceived that the only mischief remaining was a small bit of dead bone, which was almost as easily removed as lifting it from a table. The villainous plaster was discarded, water dressing was applied, and in a fortnight only a scar remained. This was a sad illustration of misplaced faith, whether in plaster, nature, or both. My impression on seeing the dressing was that most reliance had been put in the plaster, otherwise one more than a foot square in extent would not have been used to a disease whose probable surface might have been covered by the point of a finger.

If these really are minor things in surgery, it would be well that more attention were paid to them. But, in reality, I often doubt if it be wise to sanction the use of the term "minor" at all. It implies a seeming division of surgery into two departments: as if they could not, or should not, be practised by all alike. It shows as if the worker in minor surgery was incompetent for the major; and again, it makes it appear as if the performer in great things had no room in his mind for little matters—a species of affectation by no means to be admired. I have seen a great surgeon amputate a limb with a few movements of his arms and hands, and then stand aloof to let his assistants secure the bleeding vessels and close the wound. I have often thought that there was something equivocal in thus stopping short in the operation,—as if to show a contrast as regards precision and rapidity between himself and his assistants; and, for my part, I have always found these "minor" affairs the most tedious, and often the most difficult, part of such an operation. I once heard an hospital surgeon say, that he should like just to hold the position of being called to perform operations without having to deal with the cases either before or after. Nothing could, in my mind, convey a worse conception either of the true character of surgery or of the duties of a surgeon. There can be no greatness in surgery when details are overlooked. A character for niceness in details alone will not make up the full measure of that of a great surgeon; neither will great deeds—that is, operations. There must be a combination to give perfection; and my impression is, that he who can master major surgery, so to call it, will be likely to be the most efficient in minor. I must say, however, that I have often seen a carelessness about minor things with hospital surgeons—who, from their connection with such institutions, usually constitute the great ones of the day—which has seemed to me to injure the character of surgery. Even in capital surgery, as the phrase occasionally goes, there is a necessity to look into details; for what could appear worse than to see a flap, in amputation of the lower limb, completed before it was discovered that there was not a saw in the apartment? This is no fancy picture; for I have actually seen it. This implies a want of thought and care such as might be expected from a person who would transfix and cut upwards in making flaps in amputation: a deed which I have also actually witnessed, although happily only on the dead body.

How common it is for small tumours to be taken to men avowedly of small repute! Yet must we not all admit that in general it is much easier to take out large tumours than small ones, as there is a niceness of manipulation in the removal of small growths which is not needed in the others; and this nicety in reality constitutes a more difficult operation—tries the temper and skill of the surgeon much more than the other.

However small the interference on the part of the surgeon, it should be effected with consideration and care. Operations for hæmorrhoids and partial prolapsus are generally reckoned amongst the minor, and in consequence are, I believe, often very indifferently effected. In a short time the patient is as bad as ever, and remains so until something different from "minor surgery" is applied. Operations for nævi, for small vascular tumours, pass amongst the proceedings of minor surgery; yet how often vigorous treatment is required in such after some "minor" peddling! There is an old adage, that "fools should not play with edged tools;" but there are more dangers in surgery than from cutting instruments. I have known both forearm and leg lost by too tight bandaging for simple fracture; and I have seen a young lady's face disfigured for life by the reckless, careless use of nitric acid to destroy a nævus on the lower eyelid. It was applied so lavishly that it ran to the cheek, and did irreparable mischief.

From year to year, as I occasionally meet such tumours of the mamma as this (fig. 66), which weighed nineteen pounds when I removed it; or like this

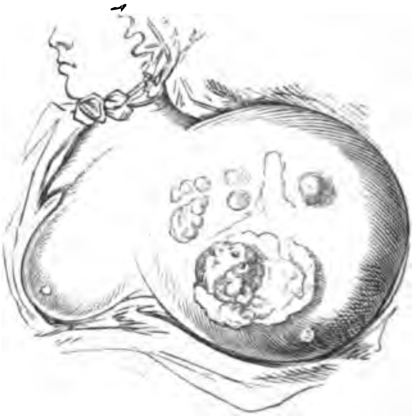

Fig. 66.

(fig. 67);—some monster form of disease, of which you see so many specimens around [pointing to casts and drawings], which has been permitted to assume that condition by the obstinacy of the person, possibly by a persistence in dealing with charlatans, possibly from maltreatment by surgery, I fancy that I have seen the last instance of the kind; but again and again one observes repetitions of the same, and we may say in surgery as with the poor, that bad cases will never cease out of the land. Yet withal I have a strong impression that surgery makes progress in respect of these cases, and that diseases which, if left, through ignorance or improper treatment, to run their course, and assume the monster aspect referred to, are in reality checked in early development by an improved skill in surgery, founded on scientific and practical data, which result from increasing age and experience. Here are

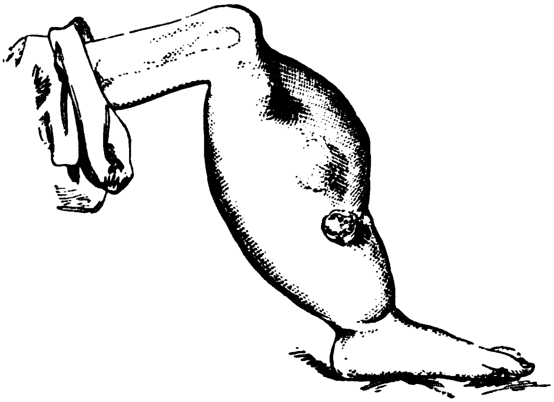

Fig. 67.

two examples illustrative of these views. In this instance (fig. 68), through folly and charlatanry, the

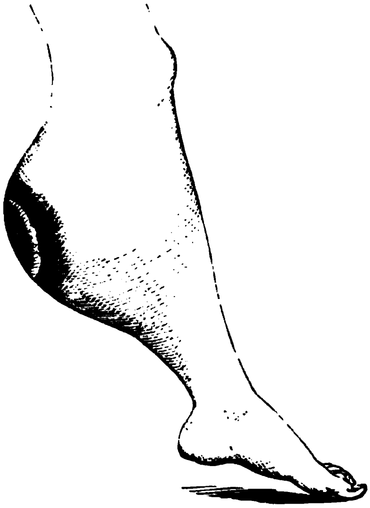

Fig. 68.

patient's life was in a manner sacrificed; even amputation was of no avail. But here (fig. 69), by taking a disease of a somewhat similar kind in a much earlier stage—although the tumour (of a fibroid sort) originated in the soleus—both limb and life were saved by early local removal.

Two-thirds of a century have increased our resources in such matters; and among modern improvements for disseminating knowledge, there is none greater, in my estimation, than that practical style of public teaching which is an essential feature in every well-conducted general hospital of the present day. Private operations in large public hospitals are now in a manner eschewed;

personal friends and apprentices are not now solely the on-lookers; the days of "hole-and-corner surgery," to use the term of the greatest medical reformer of

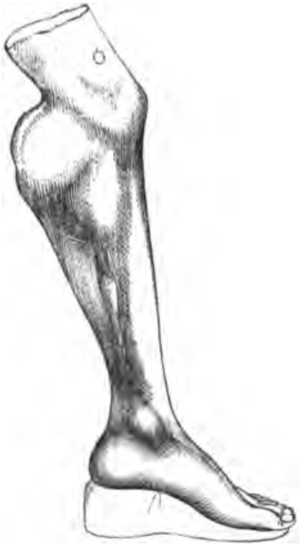

Fig. 69.

modern times,* have passed away; practice in wards and theatres is now so patent to all that it behoves the best of us to look to such laurels as we may chance to have, and to see and show that "minor surgery" requires and deserves as much skill and attention as even the best among us can bestow upon it.

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* Wakley.

LECTURE VIII.

ON LITHOTRITY.

When I lectured last year on the subject of lithotrity my chief object was to bring under notice a method of practice which in my opinion was little known. From personal experience I had learnt, that although stones might be broken ever so small, the fragments would not come away spontaneously in all instances, and that unless they were removed, patients might be left after lithotrity actually in a worse condition than if nothing had been done, with a number of stones instead of one, and consequently with a greatly increased surface for the deposit of new material. I had found out the uselessness of most of the instruments for the extraction of small calculi or of fragments, and the chief object of that lecture was to recommend small lithotrites and scoops, with a view to render the cure of stone by crushing both more precise and more rapid with lithotrites of a comparatively small size. I fancied that small stones, and particularly fragments, could be more easily attacked, and that with small scoops fragments of considerable size, or even small stones entire, might be extracted with a facility greater than thick instruments would permit. Further, I adduced a number of illustrations of the practice which seemed to me of considerable value. Since that time I have had additional reason to be well satisfied, and it remains to be seen whether this will become a useful and common addition to the practice hitherto followed of letting fragments pass spontaneously and literally by chance.

More than thirty years have elapsed since Heurteloup and Costello first in a manner taught this operation to the surgeons of this country; for although Elderton, Hodgson, and a few others, had done something, it must be admitted that our attention was most forcibly arrested by these gentlemen, as also by the reports of the proceedings on the Continent, particularly by Civiale and Le Roy.

It might be a question whether this operation has suffered in character most from its enemies or its friends; for it has often struck me that much mischief has resulted from the high eulogiums which were passed upon it in early years by those who professed to be its exponents. An amount of success was claimed for it which seemed perfectly amazing, particularly to those who were largely engaged in the treatment of stone in the bladder and of diseases of the urinary organs. These practitioners were well aware of the dangers associated with wounds of the urethra and neck of the bladder, and how a very slight cause, even the introduction of a bougie, might produce serious evil—ay, death itself; and when told, that of 250 cases of lithotrity, only two or three had been unsuccessful, they naturally felt much astonished; for in venesection itself—then one of the commonest and simplest operations in surgery—it was doubtful if such immunity from evil could be claimed. It was no wonder, then, that when some of our surgeons became a little familiar with cases under their own observation—occurring in their own practice, or even in that of professed lithotritists—and saw that sometimes a patient's sufferings were greatly aggravated, that sometimes death ensued after the operation,—they looked with suspicion on its much-vaunted claims. Instead of being free from danger, and successful in almost every instance, the reverse was so often the case that friends hesitated, and opponents loudly exclaimed against it. In the whole of my professional experience I know not of a useful operation which has been so shamefully overpraised and thereby damaged in character. If lithotrity could have spoken, it would have said, "Save me from my friends!" As years have rolled on, opportunities have enabled us to judge of its merits and defects more impartially; and I trust the time is not far distant when we may have more reliable data than have hitherto been made public, on which to form an opinion as to its usefulness.

I believe that the early experience of lithotrity in this country greatly discouraged our surgeons; for with all the skill they could apply, their hopes and expectations were disappointed, and in consequence the operation was in a manner neglected, and made but slow progress amongst us. With the exception of an essay by Mr Aston Key, and another by myself, it might be said with truth that little but casual notice had been taken of it by practitioners in these islands, although attention had been so strongly, forcibly invited by Heurteloup and Costello, who, as strangers, did more than all our surgeons together to further the progress of the operation. These gentlemen used a hammer to force one of the blades against the stone, and it is a singular fact, that the lithotrite now in general use, as constructed by Weiss, had been some time before actually laid aside at the instigation of Sir Benjamin Brodie, because it was thought that the fragments of stone flying from the blades might stick in the mucous membrane of the bladder, and cause additional irritation. But this, like many other fallacious ideas, was soon recognised as a mistake, and Sir Benjamin himself, with the very instrument in question, became the most distinguished British lithotritist of the day.

I have often wondered how it was that surgeons of this country took so slowly to lithotrity. Brought before them as it was with the highest imaginable character for safety and comfort, it seems strange that it should not have been adopted at once, when it was intended to supersede the difficult, formidable, and often fatal operation of lithotomy. I believe that when men came to see the operation in its results, as well as in its performance, and were no longer led by reports only, a feeling of disappointment largely prevailed. It was not so free from pain, trouble, and danger as had been alleged. Death came when little expected. Inflammation of the mucous membrane of the bladder, fever, disordered urine, retention, were no unfrequent results. The pain attending the use of the instruments was hardly to be borne in some cases; and these results had been so little referred to in the early reports of the operation, that surgeons were taken by surprise, and could not but contrast the smooth after-progress of lithotomy, where the operation was successful, with all the distress evinced in frequently repeated lithotrity in the same case. No doubt the awkwardness of manipulating with new instruments for a new operation had some influence. Then, too, I imagine that those in our ranks who had already become adepts in lithotomy were in some degree reluctant to give up the most brilliant operation in surgery; and younger men, looking to the laurels won by their predecessors, still clung to the exciting memories of lithotomy.

But it is characteristic of progress and civilisation, that that which seems best at one time is set aside and forgotten by advancing improvements. At no period of the history of man has this been so conspicuous as in the present century; and the zeal of those who practise surgery has been no less in proportion than that of those who deal with other great things of the day. Within these forty years an operation, in a manner hallowed by the antiquity of two thousand years or more, has been largely superseded by a process whose seeming simplicity appears in a manner to set it out of the category of an operation. I may now add that the seeming apathy of the profession in this country has been amply counterbalanced by the valuable writings of Brodie, Coulson, Thompson, Hawkins, and in the text-books of our surgical teachers of the day.

I have already, in former lectures, characterised this procedure as one of the greatest additions to modern surgery. However brilliant an operation lithotomy may be, there are horrors associated with it enough to appal the strongest mind, either in patient or surgeon. Indeed, the latter, from his experience, knows them so fully, that, in the conscientious discharge of his duties, he lends a willing ear to any proposal intended to simplify or to set aside the process altogether. Lithotrity has as yet proved by far the most perfect substitute; and, although I believe that it falls short of the superiority at one time claimed for it, yet I am fully convinced that among the great operations in surgery there is probably none so deserving of the study of those who are likely to be called upon to treat stone in the bladder. It is curious to notice how differently operations in surgery are estimated by different men. Thus within the last twelve months, one of the ablest hospital surgeons of London has publicly stated it to be his opinion, that lithotrity is so simple in its performance as scarcely to be worthy the name of an operation, whilst another surgeon of equal standing maintains that its difficulties can hardly be over-estimated. My own experience leads me to hold this latter opinion emphatically; for I know not any process in surgery requiring more forethought, knowledge, manipulative skill, and after-judgment. It must be admitted that in some instances the simplicity appears extreme; but others show very differently; and as exigencies often arise when they are least expected, the surgeon can never cease to watch with anxiety the varied progress of most such cases.

It has always appeared to me that the modern surgeon, whilst he has had increased powers given him over this painful disease, has also had increased difficulties in deciding upon his line of practice. Formerly, when a stone was detected, and patient and surgeon had come to the conviction that an operation held out the only hope of relief, there was not a question as to the nature of the proceeding: lithotomy, as a matter of course! The varieties in this operation, to be preferred or avoided in accordance with the views of individual operators, occasioned no special anxiety, and little was thought of except the known difficulties and dangers of the proceeding. If the event was fatal, still (the operation having been properly performed) the surgeon was satisfied that the best that lay in surgery had been done for his patient. There was no afterthought but that the sufferer, without such an operation, must have lived and died in miserable pain. But now the first thought is, What operation shall be selected? and at once the modern difficulty is raised. There are still, and possibly there may always be, the professed lithotomist and the professed lithotritist. Notwithstanding all the boasted success of the latter, every honest man of experience must admit the dangers and other lesser evils of the method by crushing. None but fools or knaves affect any such superiority in result as was alleged in the early days of this operation. With those who profess all for one operation or the other, there is no difficulty. It must be cutting or crushing. But, happily, surgery now stands on higher ground than this easy method of decision implies. A first-class surgeon of the present day cannot be allowed a right to be only the lithotomist or lithotritist. He must hold the balance between the two operations, and decide, as best he can, which of the two shall be selected. That is the question, and a mighty difficult one indeed it often is. The after-comfort of the patient, even life or death, often hang upon the decision. I confess that my experience, instead of lessening my hesitation on this question, has rather added to it, and I am now more diffident in forming a decision than at a time when my experience was not so full. It is this very experience which leads me to hesitate. Those who have seen but a little in either way are apt to judge hurriedly and unwisely; for, whether success or misfortune have befallen, the data are not sufficient.

What are the circumstances which lead us to our determination? There are few questions in surgery more important, and I fancy that I cannot in this lecture address you on a more interesting subject.

Age seems to me to form a most important element, particularly in the male. It may reasonably be doubted if better can be done before fifteen than cutting for stone. The success of lithotomy in young subjects is probably greater than could be secured by lithotrity in similar cases. Taking my own experience, announced last year, of only two deaths in fifty operations, I have no hesitation in stating my conviction, that I could not have had equal success with lithotrity in these cases. In some the process would have been well-nigh impossible, such as with stones of this bulk [specimen of large stone shown], for here the diameter of the urethra would have precluded the use of a lithotrite of sufficient power. Looking to the size of the urethra in the male before puberty, its length, its irritability; the comparative irritability of the bladder and of the subject generally; and I may add, the conical shape of the bladder, whereby there would be a greater tendency to blockage and retention than in the adult, I feel justified in stating that where the operation might require repetition, it would certainly, although ever so successful, be attended with an amount of distress to the patient, and probable trouble to the surgeon, far greater than any supposed advantage. I confess, however, that I do not think this question has been investigated. Until within these few years there were no instruments that could have been used in such cases. To the best of my knowledge there were none such as I displayed in this theatre last year; but if blades like these [showing a variety] could be brought against small stones such as are usually found in young persons, so as to effectually crush them to sand, I believe that this operation might after all be found more generally applicable in children than it is usually deemed. As an adjunct to this kind of practice, chloroform would be indispensably necessary; without it the needful quietude could not be secured.

In the female, whether under or over puberty, I consider that any other operation than lithotrity should be an exception to the rule. With various-sized instruments sufficient strength of blades can be calculated on; and chloroform will permit the ready use of both crushers and scoops; so that, in accordance with views which I laid before you last year, the operation might be completed in all ordinary cases in one or two occasions.

But stone is found in the adult twice as frequently as in the young person, and, for manifest reasons, its treatment in such patients must be held as of more than double importance. It is of greater interest to consider what is best for this larger class of cases, particularly as the rate of fatality in lithotomy rapidly increases after puberty, and it is chiefly in these instances that the question between lithotrity and lithotomy arises.

There are, I suppose, surgeons in this country who still look upon lithotomy as the rule, and lithotrity as the exception. Yet I believe there is a generally felt impression that the reverse should now be held as the rule; and such is my own conviction. When stone requires mechanical treatment, lithotrity should be the first proposal, and if it cannot be, then lithotomy must be thought of. If such be the predicament, let us see by what process of reasoning the surgeon may have come to such a conclusion. He will have examined his patient, and found the urethra narrow and irritable; the neck of the bladder and mucous membrane particularly sensitive; the prostate somewhat large, and so firm in substance that it has been difficult to pass a sharp-curved instrument; the bladder disposed to throw off its fluid contents; the stone large, perhaps more than one; and possibly withal an irritable temperament, a want of moral and physical courage, with a disposition to oppose, rather than facilitate, all manipulations. These conditions, where present, hold out most unfavourable prospects for the satisfactory or successful issue of lithotrity, and it is to me very doubtful if the operation should be resorted to in such cases. Yet it would be unwise to reject lithotrity in all at a first or second examination. It is remarkable how in some these conditions become modified. The patient may pluck up better spirit, the parts by usage may become less sensitive, the operator by custom may manage to get through the prostate more readily, and the fragments may possibly be more easily dealt with than the entire stone. All this may happen, yet it must be admitted that the conditions referred to induce at first sight serious objections to lithotrity.

It is a good custom, in many instances, to make repeated examinations before a final decision; for whilst the opposing indications may in some be favourably modified, it will occasionally happen that where at a first glance all may have appeared highly propitious to lithotrity, a condition may arise which will at once put an end to all idea of resorting to it. I have seen illustrations frequently of both these changes, and have sometimes been much struck with the effects of what may be called preliminary manipulative treatment. It frequently seems desirable to dilate the urethra with bougies before crushing, and their use is often advisable to relieve irritability—a result of which we have daily cognisance in treating strictures; but as in such cases we every now and then see considerable fever excited, and a train of symptoms particularly alarming to those who have little experience, so in using bougies preliminary to lithotrity, some troublesome symptoms may arise which may induce the surgeon to be unwilling to adopt that procedure. After the bougie the patient may in a few hours experience a chill; shivering, sickness, and vomiting, may all ensue to a considerable extent; the surface of the body may become remarkably pale and cold, the pulse will be very feeble, the eye will appear sunken, the voice will be as in a whisper, and it will seem as if rapid sinking had set in. After a few hours the rigors will cease, and so will the sickness; the pulse will improve, and so will respiration. A reaction will take place, almost as alarming to the inexperienced as the previous condition. There will be rapid breathing, a bounding pulse, a flushed surface, particularly of the face, and a racking headache. Profuse perspiration will then set in, and most of the alarming symptoms will disappear. The kidneys and bladder will sympathise. At first there will be scanty and high-coloured urine, and when it becomes more profuse, as it does in the later stages, it will deposit a thick sediment, and possibly a copious quantity of tenacious mucus, in some instances joined with pus. In eight-

and-forty hours the patient may be as well as ever, but in some there will remain a great disposition to a recurrence of most or all of these evils. Such symptoms as these are by no means uncommon after lithotrity, and they cause much distress to the patient and anxiety to all. Every one experienced in stricture cases must be more or less familiar with them. When, a few years ago, perineal section was more in fashion than at present, such symptoms were not unusual, and to the uninitiated caused great alarm; yet though formidable in aspect, they were not always so in reality. Once passed off, they seldom recurred, chiefly, perhaps, owing to the cause which had induced them not being repeated. Now, if such evils are brought on by the simple use of a bougie, what might not happen after a single sitting of lithotrity?—what after frequent repetitions? A man could scarcely feel justified in subjecting his patient to lithotrity after such experience as this. I have repeatedly declined it, and have afterwards seen the best results from lithotomy. If a stone be small, and it be possible to make away with it at a single operation, I should not mind advising lithotrity on a very brief acquaintance; but if the operation is likely to require two or more sittings, then I should think it wise of the surgeon to test, as it were, his patient's constitution by a repeated preliminary use of a bougie or sound.

As yet I have referred only to the cases likely to be rejected for lithotrity. Let me now speak of those which seem peculiarly favourable for the process. If the urethra be wide and free from marked irritability; the neck of the bladder and mucous membrane of that viscus be not particularly sensitive; if the prostate be of normal or moderate size, and so soft that a sharp-curved sound, or lithotrite, can be readily passed, the case will appear in most respects favourable. If, added to this, the stone be small, then all the essentials to successful lithotrity may be deemed present, and it is not likely that the bladder will be subject to spasm, nor will the patient evince much irritability either of mind or body. Even though the stone should be of considerable magnitude, or should two or more be present, there need be no hesitation in selecting lithotrity. It may be that evil will come after all; but under such circumstances the surgeon may feel satisfied that he has done the best for his patient that human judgment could dictate. Should he in the interval have had, or seen, one or more successful cases of lithotomy, he need not repine and wish that that operation had been selected instead, for had it been, the results might have proved equally disastrous.

When lithotrity is seen in perfection, it certainly is a vast triumph of surgery. A concretion, too large to escape by the natural passage from the bladder, and which, when allowed to remain, almost certainly increases in size, and thereby adds to the daily and hourly sufferings, is broken into fragments so small that they pass away with the ordinary stream of urine; and thus the bladder is left free and in a normal condition. The patient need not be in bed an hour beyond the customary period of rest, and may move about, attending to his ordinary duties as usual. He may walk to the surgeon's house and from it, as if paying a friendly visit, and in a few days or weeks have his mortal foe within his manual grasp, shattered to fragments, and impotent for further evil.

This is, indeed, a glowing picture, and happily one which is frequently realised. Modern surgery is justly proud of it. But dark shades and obscurities often arise to mar the effect, and I fear we have heard less of these than of the brighter aspects.

Entertaining as I do most favourable views of lithotrity, I yet must say that the choice for good or evil between it and lithotomy is more nearly balanced than some imagine, and that when each operation is properly, even perfectly performed, the effects and results are often beyond the surgeon's control. Of the two, lithotrity certainly appears the least hazardous. I believe myself, from my own experience, that it is so; yet when least expected, the worst may befall, and thus the most enthusiastic hopes may be readily broken.

A very slight abrasion, scratch, or laceration may set up in certain cases a train of evils such as I have already depicted. Mischief does not follow as a matter of course, but it is more likely than if no abrasion were present. Hence the advantage of a light touch, and of light, well-proportioned instruments. It must be admitted, however, that experience has shown that neither bladder nor urethra seems much affected in many instances, even when laceration has been considerable.

But what shall be the result I fancy no man can predict; we can only appreciate it after the operation. It may, in many cases, be a nice question, whether the injuries, say in contusions, nippings, and lacerations inflicted by instruments, or the presence of angular sharp-pointed pieces of stone and sand, are the most frequent causes of the evils likely to follow lithotrity. Sometimes it will be one, sometimes the other; and doubtless in many there will be a combination. My impression is, that as the original stone, from its earliest stages to the time it has been attacked, has been the cause of suffering which has brought the patient into the surgeon's hands, the fragments are the most frequent cause of after-mischief. No doubt their asperities, if they remain long in the bladder, are in most instances blunted by mucous and new deposit; but just as the first nucleus may have produced evil, so may these various fragments add accumulated mischief. The sooner these are disposed of, then, the better for the patient. Doubtless the smaller the fragments the greater is the chance of their escape; but whether small or large, they are apt to lie behind, and there are few nicer questions in lithotrity than whether these should be left to undergo spontaneous extrusion, or be so handled by the surgeon as to ensure their immediate removal. In my lecture on this subject last year, I expressed a strong opinion on the advantage of removing fragments, and additional experience has added strength to my convictions. No doubt in most cases fragments come away spontaneously in a satisfactory manner, but even in many of these, the cure would be rapidly expedited were such means taken as I have described in the lecture referred to. I need not at present dwell on that subject, but I repeat, that the practice cannot be followed without the slender instruments then described, and some of which I now exhibit. With those in common use nothing of the kind can be effected.

Certain dogmas have prevailed regarding lithotrity which had been hurriedly fixed, but which have now been dispelled by experience. Thus it was said that the operation was scarcely practicable or proper unless eight or twelve ounces of fluid could be retained; indeed, the more the better! This was under the impression that the stone could be more readily seized, and that the distended mucous membrane would be less likely to be nipped between the blades, or between these and the stone. If sufficient urine were not already in the bladder, the first step of the operation was to inject tepid water. Now I think it may be set down as a rule, that a capacious bladder and large quantity of water are objectionable. They certainly do not preclude the operation, but they assuredly make it more difficult and uncertain. A stone or fragment moves so freely in a large quantity of water, the slightest touch causing it to change its position, that it readily eludes the blades; and, again, where such a bladder as is here implied is nearly empty, the mucous membrane may possibly be in folds, between which fragments are liable to escape the closest search. To say the truth, however, I have little faith in the presence of so-called folds of the mucous membrane of the bladder. For twenty years or more I have rarely used injections as a preliminary step, and I have often drawn off urine with a catheter when, in accordance with these views, I have fancied the quantity too large. A small proportion of fluid is decidedly better than a large, but care should be taken that the blades of the lithotrite can be used with facility, and without the chance of contusing and abrading the mucous surface.

Paralysis of the bladder, such as requires the daily use of the catheter, has been generally considered a positive bar to lithotrity. But with the small scoops which I have recommended the condition is positively favourable to that process; for there is generally in such cases an apathetic state of the mucous membrane, which permits a free use of instruments required for the removal of fragments.

Some years ago we were, on nearly the highest authority, positively prohibited from turning the point of a lithotrite downwards behind the prostate gland. If this organ be somewhat enlarged, particularly in its middle lobe, there is always a kind of pouch behind; and even when of its normal size the bladder in old persons is capacious at this part. Doubtless, as a patient stands, the stone usually lies in this place. Even in the horizontal position it keeps there, unless the pelvis be raised. In early days it was the custom to lower the shoulders and elevate the pelvis, for the sake of getting the stone towards the upper part of the viscus, where it was thought it could be more readily and more safely caught. Occasionally even yet this position seems desirable; but the fallacy of not searching behind the prostate has been long since exploded. The best of modern sounds, that with the short curve recommended by Heurteloup, was constructed with the view of being turned point downwards into this pouch, and to catch a small stone or fragment in this locality with a lithotrite or scoop, a peculiarly eligible manœuvre. These two sketches illustrate my meaning. Fig. 70 shows the lithotrite with its beak upwards, in a position not likely even to touch the stone; the other (fig. 71) shows the blades pointed downwards, so that if opened and dipped a little lower they could not fail to catch it. Further, I can affirm, from ample experience, that there is no more risk or danger in moving the blades here judiciously than in any other part of the bladder.

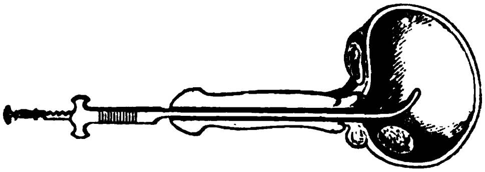

Fig. 70.

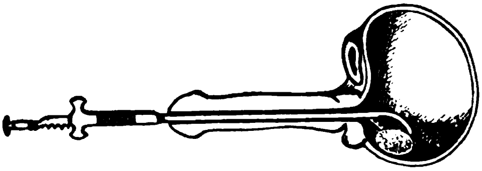

Fig. 71.

The attitude of a patient, the question if he was to lie on a bed, a sofa, or on a table made expressly for the purpose, were all thought matters of very great importance. Every now and then some little variety of attitude, from the horizontal to the erect, is desirable; but generally, in private practice, a hard-stuffed bed or sofa is all-sufficient. A pillow under the pelvis is sometimes an advantage; more, however, to keep the handle of the instrument above the mattress than with the intention of influencing the position of the stone. In hospital practice, the ordinary operating table answers all requisites, and that constructed for the special purpose of lithotrity may now-a-days be considered as a remnant of a certain amount of clap-trap which was associated with the early history of the operation.

The question as to the propriety of giving chloroform in lithotrity seems still a moot one in certain quarters; but I have none regarding it, and having used it in the greater number of the cases I have had ever since anæsthesia was introduced, I can speak of it in unqualified praise. There are many instances in which it is not requisite, but I am certain that without it the operation would be well-nigh impossible in a considerable number.

But, sir, the subject of lithotrity cannot be treated as I think it deserves without reference to lithotomy; and such further remarks as I wish to make I must reserve until I speak of the latter theme, which I intend to do at my next lecture, when I shall state the results of that experience which has enabled me, from my own practice, to form this collection of calculi, which I have now the honour to place before you.

LECTURE IX.

ON LITHOTOMY.

Mr President and Gentlemen,—The observations on lithotomy which I made last year had reference to patients under puberty, and were in a manner special, because I was desirous of giving expression to certain views of my own, which I had long entertained and taught in my hospital and professional labours.

I purpose to-day to speak of lithotomy in the adult, this being, perhaps, the best time and opportunity of adverting further to this absorbing subject. It is indeed marvellous how much has been said and written about this operation, and most surgeons of experience have evinced the greatest interest regarding it. Mr Crosse, in his celebrated prize essay on the subject, appended a list of authors who have written about stone and its cure sufficient to appal the most zealous bibliographer. Eight hundred and nine authors, or sources of information, have been referred to. Mr Crosse's own work is of no small magnitude, and since he wrote the numbers have increased probably by hundreds. There have been writers about it, from the man who has actually volunteered his experience amounting to that gained from a single case, to those who have drawn their ideas from scores or hundreds. It is remarkable that one with perhaps the greatest experience of any that ever lived—Frère Jacques,—who was said to have operated on five thousand cases, should have left no personal record of his practice, and that even our own Cheselden, who had a fair *cacoethes scribendi*, should have written so little and so obscurely about an operation on which his posthumous reputation so largely depends. Like Rau, he seems to have fancied that there was "no story to tell;" and unfortunately, these men, in leaving others to explain their great and invaluable experience, permitted an amount of confusion to arise which will never be cleared away. Mery, Albinus, Douglass, and Cowper, were great surgeons and anatomists, but their aspirations appear below the level of the great masters whose operations they endeavoured to explain.

There is probably no operation in surgery which has undergone more modifications, and yet the great feature, the grand hazard to life, has remained much the same in all ages. A stone cannot be extracted by lithotomy without a wound of some kind in the bladder. By the hap-hazard method of cutting on the gripe, or the more precise mode of Cheselden or later anatomists, not only has the bladder been wounded, but a fluid, dangerous to life when in contact with any tissues but those provided by nature for its escape, is permitted to touch new surfaces, on which it might induce fatal inflammation. The surgeon may control and limit the reach of his knife, but cannot make sure either of the effect of his manipulations or of the influence of urine when it gets into contact with raw surfaces.

The neck of the bladder, probably from being its natural outlet, has been the favourite part with the surgeon, to give egress to the stone; but he has occasionally left it untouched, and opened the viscus in front, above the pubes, near its upper end, with a view to lessen the hazards; the latter being called the high operation, in contradistinction to that below the pubic bones, where a variety of modifications have been devised, few of which, however, I mean to say anything about at the present time. Perhaps "perineal" might be the most appropriate term for lithotomy in this locality, as the incisions are all made in this region, sometimes in front of the anus, either by the semilunar line described by Celsus, or the straight mesial line of Marianus—these being the oldest of the kind,—or by a wound on one side.

In one style every effort has been made to avoid a wound of the rectum, while in another the gut has been purposely laid open. But of all the incisions, those on one side of the perineum have been most frequently made, and they have included not only the skin, but all the tissues between and the neck of the bladder, as also one side of the prostate gland. These incisions constitute the main features of lateral lithotomy, and it is difficult to say whether this term refers to the whole, or to that made in the skin, or that through the prostate gland. My idea is, that it should refer to the whole of the operation as being effected on one side of the mesial line; yet it has appeared to me that some have considered the incision in the skin on one side as the most important feature, whilst others have referred chiefly to that in the prostate. There is no doubt that this was the direction in which Jacques, Rau, Cheselden, and most other great lithotomists, reached the bladder, and we in this country associate Cheselden's name so intimately with this style, that it is not unusual to refer to it as the English operation. No doubt Cheselden had followed a precedent, but it is curious in the history of the proceeding to perceive that surgeons were sent from France to report upon his operation, although we have every reason to suppose that Cheselden merely followed in the steps of Jacques, who performed many of his early operations in Paris, and of Rau and others who had operated on the Continent. We are told that Jacques, having left Paris, impoved upon his operation particularly by using a director or staff as a guide to the bladder, a change with which, doubtless, continental surgeons were as familiar as our English lithotomist.

The lateral operation, whatever may be its true signification, is clearly distinct in many important features from the mesial. In some respects, the old, probably original process, of cutting on the gripe, may be called a mesial operation, but the term has been used chiefly to denote the Marian operation, by which the incision to reach the bladder, and through which to extract the stone, was made in the raphé of the perineum in front of the anus. In some of its aspects this proceeding has been revived in modern days by Mr Allarton, and it may be said to be, through the zealous exertions of that gentleman and others, again on its trial. Other modifications have been made upon it in modern times, particularly by Vacca and Lloyd, who each divided the front wall of the rectum to facilitate proceedings; but no kind of lithotomy has attracted so much attention, or been so frequently performed, as the lateral, and it is to it chiefly that I intend my present remarks to apply.

Two great objects have evidently been aimed at by all who have given attention to this operation—viz., rapidity of execution and safety of result; and, with due regard to perfection, there can, in my opinion, be little doubt that rapidity, even in these days of anæsthesia, is an advantage. But various opinions obtain as to the way in which this is to be secured, and it is perhaps a great danger that rapidity should be more in the mind of the operator than safety. If there is one operation in surgery in which dash is aimed at more than in another, it is in this. Dash here means rapidity perfectly accomplished; and with some this is achieved by free incisions, such as greatly endanger the structures and organs involved, whilst with others an amount of energy or force may be employed which may possibly be as dangerous (if not more so) as division of tissues with the knife. In fact, it may be said that at all times, in the history of lithotomy, there has been a question as to freedom or limitation of the incisions. The old adage of Hippocrates, that wounds of membranous parts are dangerous, has doubtless had its influence here; and as he had seemingly applied this term to the bladder itself, we may consider the Marian operation, and all others which have been intended to spare this organ, as having been devised in accordance with this maxim; hence, probably, the modern disquisitions, since Scarpa's time to the present day, as to limited or free incisions in and through the prostate. These all appear momentous questions, as they seem to involve the life or death of the patient. Yet who can solve them? What man of acknowledged reputation can say which is the safest, and, therefore, the best manner of proceeding—whether rapidity or slowness, free incisions or limited, are the best? Few well-known men in modern days can boast of an experience such as that of Jacques, of Rau, or of Cheselden. Instead of the conjectural number of 5000 of Jacques, let us take the 213 of Cheselden, which he chose to refer to as his public practice in this operation. Of that number he lost only 20; yet I have it from Sir Benjamin Brodie, as a tradition which he had imbibed, that in the latter years of Cheselden's practice, private as well as public, the results had been such as to cause him the greatest distress and mortification. But let us take it at the best of his own showing, and on inquiry we cannot perceive to what his success can be attributed. His own quaint idea, that it was "to the happiness of a mind that was never ruffled or disconcerted, and a hand that never trembled during any operation,"* cannot have any influence with an experienced lithotomist in this important question; for these qualities, certainly good of their kind, are such as have been possessed by hundreds and thousands, but they do not give us the key to successful lithotomy. Nor is it easy to see in what other respects Cheselden exhibited superiority. In dealing with the neck of the bladder he seems to have cut, at different times, in a direction from and towards himself respectively. The incision onwards from the membranous portion of the urethra to the prostate and bladder seems, in my estimation, to have been the favourite, and that most frequently performed; and my impression is, that he aimed at rapidity of execution as a feature, for he in a manner boasts of having generally extracted the stone in a minute or two, more or less. Yet most that Cheselden seems to have done has been effected in modern times, although not always with the same measure of success. I by no means, on such an occasion as this, wish to impugn the published and rumoured success of such distinguished men as Martineau, Blizard, Cline, Green, Crichton, Hodgson, and others; but this, so far as I know, is certain, that none of them have had the numbers that Cheselden treated.

The causes of the successful issue or fatal result of lithotomy in cases reasonably well selected and operations reasonably well performed, are problems of deep interest. It is now two-and-thirty years since I first performed lithotomy, and, with a large personal experience, I feel yet unable to offer decided opinions regarding these problems. Hearing, as I have occasionally, of wonderful success, I have had my suspicions that the expression has been used by some to indicate the mere extraction of the stone, and not the final issue of the operation. Breaking a stone in lithotrity, and extracting in lithotomy, have, I fear, been taken by some as the standard of success—the issue has been ignored! There seems to me to be a mystery associated with lithotomy that has not yet been solved. For palpable errors there is an explanation; but when, to all appearance, there has been perfection in the operation, and yet death has been the issue, I confess that I have been puzzled beyond measure. I have performed lithotomy without a shadow of strain, tax, or tension on the parts more than the needful manipulations, yet the issue has been fatal; and again I have been conscious of an amount of rudeness such as has made me tremble for the result, yet an untoward symptom has never once appeared. I have, indeed, seen badly-performed operations where nothing but death could have been anticipated, and where the anticipation was realised; but I have known such an amount of force and haggling end successfully that I have been amazed. I have known several strong men pull at a nine-ounce stone for an hour, when the patient has been put to bed well-nigh exhausted; yet on the stone being extracted eight days afterwards the final result was perfect. With such experience as I have I cannot pretend to explain these seeming mysteries. Working on inanimate material, no doubt precise manipulation must be of the most perfect effect; but when the phenomena of life are afterwards involved, the result seems in most instances to be beyond human control. Cutting or sparing certain tissues or parts seems to me of little moment as regards the grand result; yet, as it may be thought that these doubts and hesitations are scarcely becoming on the part of a Professor of Anatomy and Surgery to the Royal College of Surgeons of England, I shall endeavour to put some of my views in a more palpable shape and aspect.

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* Cheselden's Anatomy, Seventh Edition.

Much stress has in modern times been laid upon cutting that part of the pelvic fascia which is reflected upwards on the neck of the bladder from about the middle level of the prostate; but I am very doubtful of the pathological views on which the objection is founded. I doubt if such division is often made, and supposing it is made I doubt much the result which has been said to follow as a matter of course—viz., infiltration of urine, leading to suppuration and death. Infiltration I believe to have been the bugbear of lithotomists. With my own experience, and all that I have observed otherwise, I declare that I have never seen a genuine case of urinary infiltration. I have seen cases where the surface of the wound has evidently been irritated by the urine, but I doubt if any serious evil has ever arisen on that account. If there has been unhealthy or fatal inflammation, I fancy that it has come concurrently from some other cause—some unhealthy and unforeseen state of the constitution. There is such resemblance between infiltration and diffuse inflammation of cellular tissue, that they are, I believe, often confounded. Serous and lymphatic effusion so much resembles urinary infiltration, that when it occurs in the track of the wound in lithotomy, such a mistake (as I consider it) as that I allude to is not unlikely.

Infiltration of urine, I maintain, never takes place when there is such a free passage as that after lithotomy. The diffuse swelling in cellular tissue so characteristic of infiltration is never present after lithotomy even in fatal cases. Surgeons are familiar with ordinary infiltration, and how readily the urine escapes when incisions are made in such cases. All my experience leads me to say that infiltration is one of the rarest causes of death after lithotomy.

Whilst making this statement, I am not disposed to refer lightly to that free incision of the prostate which implies a division of the reflected portion of the pelvic fascia. On the contrary, I advise that it should be left untouched, and declare my conviction, that stones of great magnitude may be removed without such free use of the knife. There are those who in this operation have come well up to *Mercutio's* idea of a fatal wound: " Not so deep as a well, nor so wide as a church door."* Yet withal the gap has been big enough to be fatal; and both depth and width have often, I fancy, been the cause of evil in this wound. Depth which has gone through the prostate, wounded the bladder where needless, and even penetrated the rectum, or possibly the peritoneum—width being implied by these very features.

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* Romeo and Juliet, Act iii. Scene 2.

Whilst admitting that patients have often recovered after huge and so-called free incisions about the neck of the bladder, I am, however, strongly impressed with the idea that a limited incision is safest. It implies, in my estimation, less injury to important parts. But I scarcely recognise as legitimate any incision in the neck of the bladder which will permit the egress of a stone without at the same time a certain amount of dilatation, or it may be laceration.

Stones of one inch or more in diameter are of very common occurrence; and the circumference, three inches, required for the egress of these is in proportion. Now, I believe that if the surgeon aims at making an incision in the neck of the bladder equivalent to the free egress of these without stress or strain, he makes a wound of the most dangerous magitude, from which the patient is not likely to recover. I dare not, I cannot, say that wounds of the membranous portion of the neck of the bladder beyond the prostate are certainly fatal; on the contrary, I believe that they are not so on all occasions; but I am as firmly impressed on this point, that there is great comparative safety when a rim of prostate is left at the base of the wound of that gland. I am equally confident, too, that stones of large size may be removed through a wound of this organ which has been, as regards the application of the knife, of comparatively limited extent. Here (fig. 72) is a stone of fully six inches in circumference, which was removed through a wound not at first larger than sufficient to admit the forefinger of the left hand; yet the patient never had a bad symptom. The increased magnitude was gained by dilatation, which was chiefly effected in drawing the stone out within the grasp of the forceps.

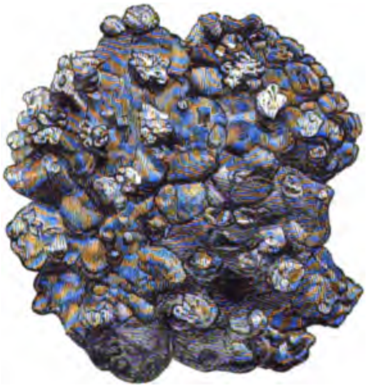

Fig. 72.

These latter remarks, it will be perceived, bear upon a very interesting and much controverted question as to limited or free incisions in the neck of the bladder. I doubt if this question will ever be settled, but on my own part I have no hesitation in declaring my preference to a limited incision, for I believe as implicitly in dilatation here as I do in the neck and mouth of the uterus in parturition, even though the latter is effected by nature, whilst the former is by force on the part of the surgeon. I am so strongly impressed on this point that I do not object to the term laceration which has often been applied to the somewhat forcible extraction of a stone; for my opinion is that laceration, provided a margin of prostate is left, is safer than the so-called free incision, which fairly divides the left lobe of the prostate and runs into the membranous portion of the bladder. But in advocating a limited incision internally, I am equally convinced that a free external wound is of importance, for it greatly facilitates the deeper and more delicate part of this operation. When the distance between the surface and bladder is great, partly from obesity, partly from enlargement of the prostate, if a free incision be made, the knuckle of the forefinger may be buried in it, so that the point can be more readily placed within the prostate or the bladder, whilst it permits the more free and safe use of forceps, both in passing them into the bladder and in extracting the stone. Without this free space, there is a risk, in introducing the forceps, of passing them between the bladder and pubes, or between the bladder and the rectum. Moreover, in extracting a large stone, there is a freedom given to the leverage of the forceps, which, whilst much appreciated by the accoucheur, has been too little thought of by the lithotomist.

The difficulties of lithotomy in the adult are, I apprehend, largely of the surgeon's own making. He limits the wound perhaps, making it too narrow throughout, particularly on the surface; or in not penetrating into the bladder, whereby he runs the risk of the blunder of making a space between the pubes and prostate, that which in my lecture last year I endeavoured to impress emphatically as the grand source of failure in the operation in children; or he places it too high in the perineum, thereby setting his work too much in that dangerous strait, the angle of the pubes; or he does not make a proper use of the forceps either in clutching the stone or in drawing it from the bladder.

When the perineum is so deep that the finger cannot reach the bladder, the operator must do the best he can to introduce the forceps, always taking care, under such circumstances, that force is not used; for if he has cut into the bladder the forceps should glide along with a gentle push. If he has not confidence in simplicity (guided by anatomy) at this stage, he may make use of a blunt gorget, an instrument which seems now to be in a manner out of fashion, although in recent times its use has been revived as an aid in mesial lithotomy.

As to a wound rather high in the perineum I take but little account of it, provided the operator in using the forceps draws them downwards, and does not persist in working in this space, or even drawing the stone upwards, as has occasionally been done with fatal effect.

The greatest cause of trouble, and even failure, in the actual completion of lithotomy, I believe, depends upon not grasping the stone. I have often seen all the steps well performed up to this one; but here difficulties, seemingly unaccountable, have arisen, and the worst evils have followed. I was early impressed with this feature. An hospital surgeon of limited experience operated on a case of stone, and did the work well until he began to extract. Here the easy movements ceased. No sooner did he attempt extraction than the forceps slipped. Effort after effort was made, but all to the same effect. In all surgery I do not think that there is so much concentrated energy of mind and body required as in lithotomy, and it is the more exhaustive too, in my opinion, because it has in a manner to be concealed. This was probably the effect in the case I now allude to. The operator, a man of considerable physical powers, became exhausted, not, however, until the lapse of about an hour, and when he and the patient were both well-nigh in a similar plight, another surgeon, a master in the art, took the forceps, and extracted the stone with the utmost facility. It was the size of a lemon, and most operators would have had some trouble with it. The fault with the beginner here was, that he did not take the stone fairly within the clutch of the blades; he only nibbled at the end. But the second man put the blades upon its sides; in other words, he inserted them deeper into the bladder, whereby he was enabled to grasp the stone by its middle, so that it could not escape from the instrument, and the small resistance of the neck of the bladder was as nothing compared with the energy of his hand and arm. It has fallen to my lot on two different occasions to extract the stone eight days after failure by other surgeons. In both instances I believe that the cause of failure was that the stone was never properly within the grasp of the blades. It is by no means an uncommon supposition, that the bladder in certain cases encircles the stone so closely that there is no room to get the blades between; but this I fancy is a great error. No bladder that I have ever seen could resist the surgeon's power in expanding the blades, and pushing them in the proper direction.

As to adhesion of a stone to the bladder being an impediment to the fair performance of the operation, I believe it to be a myth. I certainly have seen instances where the bladder and stone have held close approximation by asperities on both, but it never appeared to me that these could for an instant withstand the influence of the surgeon's hand on the forceps.

Cysts containing stones are occasionally met with, and I have seen some remarkable instances; but we hear more of these from bunglers, who have operated only several times, than from those who have had large experience.

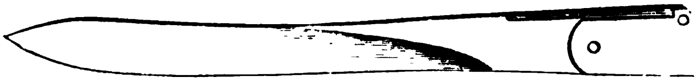

Fig. 73.

The dangers of this operation during performance are indeed few and far between, particularly when the incisions are made with a scalpel of moderate dimensions, such as here represented (fig. 73); but of course this, in unskilful hands, might prove as fatal as the dagger of Jacques, the cutting gorget, or any other ill-proportioned, ill-contrived weapon which has from time to time been used in this classical operation. I give the preference to this instrument over all I know, yet, if rashly used, it may do harm equal to any I ever heard of.

A wound of the rectum I look upon as of little moment as regards the final result of the operation. There is little or no additional danger to life in such a wound; but it is a blot in the operation which should be avoided. The accident has happened to me repeatedly; I have recognised it twice in post mortem examinations, the patients having died from other causes when I was not aware that it had happened. I have seen it once in the form of a communication between the gut and the membranous portion of the urethra, months after the external wound had healed, and where, being very small, it gave the patient but little inconvenience.

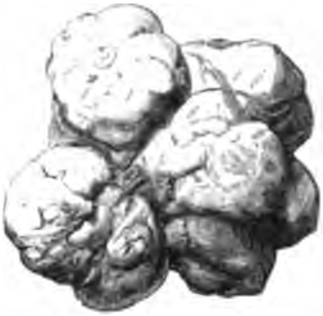

Fig. 74.

Twice I have recognised during the operation that the accident had happened, and in both of these I considered that the rectum had been torn whilst extracting. Here is one of these stones (fig. 74); and considering that this was taken from a youth of seventeen, in whom the pelvis was but indifferently developed, the accident is not much to be wondered at. The other was of equal magnitude, but in this case the parts were more developed. In both instances the entire wound healed up, and, in as far as I could make out, no evil whatever resulted.

In two cases I have seen reason to attribute death to hæmorrhage. One of these I referred to last season, in speaking of my experience in children; the other was in an adult between fifty and sixty; but in both I fancy that shock had as much to do with the fatal issue as loss of blood. In another case in the adult, where death occurred a few hours after, the bleeding had been considerable; but still I think that shock was the main cause of death; and I am the more inclined to this from having seen various examples, in which the bleeding had been very formidable, where, nevertheless, after ceasing, as it were, through faintness, the recovery was highly satisfactory.

I doubt, Sir, if I can claim any marked progress in regard to this operation in the present century; but I have much pleasure, on behalf of this College and one of its most worthy office-bearers, Dr Pettigrew, in bringing under notice some remarkable injections made by that gentleman of the veins about the neck of the bladder, such as, I believe, are not to be seen elsewhere. The lithotomist may reflect as he looks on such a specimen as this (fig. 75). He may think of the bleedings he has seen; and if imbued with the views of certain modern pathologists as to purulent and poisonous absorption and pyæmia, he may possibly imagine that he has fallen upon a good theory, if not a certain cause of death after lithotomy.

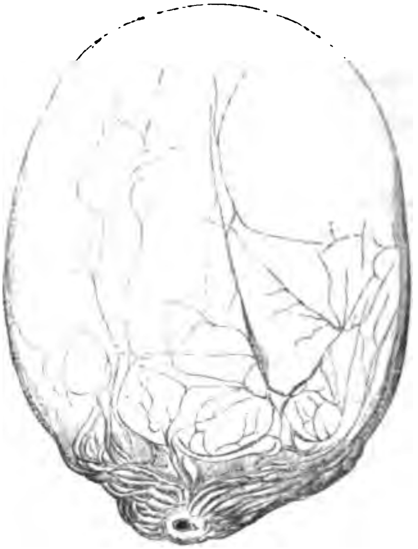

Fig. 75.

I wish, Sir, that time had permitted me to enter on many other particulars associated with this master-work of operative surgery; but as it is, I have had the chance of referring to only such prominent points as I have thought most worthy of the occasion.

In recent years it has become the custom to draw marked distinctions between this operation in the adult and in the young. I am not aware that such distinctions were closely drawn, either as regards performance or results, in the practice of lithotomists in previous times. We know nothing of them from Frère Jacques, Rau, and others; Cheselden, however, distinctly states that he cut 105 patients under ten years of age.* But in the individual practice of those of a comparatively modern date no special notice is taken of age.

In my own practice, including children and adults—in which I remember to have declined to operate in only a single case, where the patient, a lad, was apparently exhausted beyond chance of relief—I have cut publicly and privately 162 cases; of these 35 have died, giving a mortality of one in every fifth or sixth case. The mortality is considerable—ay, large; but I cannot pretend to explain it, unless it be this, that I have had comparatively a small number of patients under puberty. Of 213, Cheselden had the large number of 105 cases under ten years of age; of 271 cases of stone in my own practice, little more than 50 have been under that age; thus giving Cheselden, and possibly many others who have operated with signal success, a marked advantage in regard to the youth of the patients. Cheselden himself puts great importance on the first twenty-five cases he cut by his peculiar operation; and on examining the list, eighteen of these were not more than ten years old, and four others were not more than fifteen: three only might be considered adults. I have known some operators with ready reasons for the loss of each case; but I confess that I have none to offer, excepting the recognised danger of the operation. I think I have seen instances where defective manipulation has evidently had much to do with the evil result;

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* Cheselden's Anatomy, 7th ed., 1756, p. 333.

but (I speak it humbly) I cannot, in my own practice, lay especial blame on that score. The operations I have done worst have often turned out best; and some that I have thought the best displays of such indifferent skill as I may possess have turned to the worst account.

The late Mr Crichton of Dundee, who operated until he was nearly ninety years old, has been, perhaps, the most experienced lithotomist in this country, of the present century. We are indebted to Professor Sharpey for a sketch of Crichton's practice, written by the aged lithotomist himself, and published in the fourteenth volume of the "British and Foreign Medico-Chirurgical Review." He had about 200 cases; and of that large number lost only 14.

Mr Crichton was engaged with lithotomy for sixty years. He gives no particulars as to age; he never practised lithotrity; and possibly, owing to the introduction of this operation, it will never again fall to the lot of a single surgeon in these islands to perform lithotomy so frequently. Professor Syme has had large experience; and my friends Keith and Pirrie of Aberdeen; Nichols and Cadge of Norwich; Smith and Teale of Leeds; Hodgson when he headed surgery at Birmingham; Gutteridge of the same town; Ransome of Manchester; Humphry of Cambridge; Symonds of Oxford; Fife of Newcastle; Buchanan of Glasgow; Coulson, Solly, and Borlase Childs of London, have all had remarkable experience in lithotomy, and some a success which makes me fain to hide my head in humble insignificance.

A successful run of lithotomy may, I imagine, be deemed the greatest triumph of operative surgery; yet who dare boast in this wise? Who is there but must believe from all experience that, if he goes on, a time must come which will bring his success to the wonted average of one in six or ten? Accumulated experience teaches. this! That people will die after lithotomy is just as certain as that they will die after inflammations, fevers, and other evils incidental to humanity. Let the operation be ever so perfect, the result is in higher hands. It will be happy for the surgeon's reputation in lithotomy if he ceases work at the zenith of his average; and should he do so, his wisdom will be like that of the successful merchant, who is content to cease business at the high tide of success.

I am here, Sir, whilst holding the chair of Surgery in this College, a representative of the surgery of Britain; and I willingly express my conviction that there are amongst my contemporaries many who, according to average, can show a higher standard than I do. I know that our worthy President (Mr Hodgson) and others can do so; but numbers go far in these calculations, and I should like to hear from others with like experience the result of theirs.

The latest writing of a lithotomist may be taken as his last report; and in this sense I may state that Cheselden, having cut in public 213 cases, lost only 20. In my own practice in King's College Hospital, I have cut 100, and of these 15 have died. Mr Solly* has told us within the last few weeks, that of 63 cases in all, public and private, he has lost 14. Crichton's statements included both public and private; and as Cheselden did not publish the results of his private practice, we are entitled to infer that the Dundee practitioner in the nineteenth century was more successful than the reputed hero of British lithotomists in the eighteenth century.

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* Surgical Experiences, 1865.

But, Sir, any humble merit of mine that may be associated with this address and that delivered two days ago, is, in my estimation, now to be told. I can give a list of lithotomy and lithotrity conjoined, which, in as far as I know, has fallen to the lot of few other men in Britain. I have personally by operations treated 271 cases—162 by lithotomy, and 109 by lithotrity. Although having seen little more than half the time of Crichton's experience, I have had 70 cases of the disease more than he had. Of the 271 I have lost 47; and that shows a mortality of something more than 1 in 7 —not a bad average as operations for stone go; but lithotrity cases being included, I consider it low indeed. And I have now to state that which I look upon as of high interest in the modern history of surgery. Of these 271 cases, 219 were adults; 110 have been treated by lithotomy, and of that number 33 have died; 109 have been treated by lithotrity, and of that number 12 have died!

Here, Sir, is a contrast between the two operations of lithotomy and lithotrity as practised by the same person. I refer to it as an indication of the favourable progress of surgery during the time in which I affect to glance at its history. In my own hands, whatever clumsiness or skill they may possess, the operation of lithotrity has been considerably more successful in regard to saving of life than that of lithotomy.

If I am not mistaken, Sir, this is the first time that such a comparison has ever been made by a British surgeon, who has had large experience in both operations, and I trust that my example may induce others in high places, who have dealt largely with both sides of the question, to give us the benefit of their experience.

Here, Sir, is the collection [pointing to between two and three hundred preparations] to which I referred at my last lecture as having been made from my own practice—by my own hands, I may say. There are examples of comminution from lithotrity, enough to satisfy those not much acquainted with the operation; and entire stones, the result of lithotomy, exhibiting specimens from a few grains in weight to nine ounces—from one solitary stone in the bladder to forty-two. I little thought, Sir, when I began making this collection, that it would include such a goodly number, or that I should ever have the honour of exhibiting it at the Royal College of Surgeons of England. Here is the first, removed in 1832,—here the last taken out (in 1865) shortly before these Lectures began. Here is the most tiny—a thing not larger than a common pea; here those which weighed from four to nine ounces. Here (fig. 72) a single, solitary, grim, savage-looking mulberry, which held possession of its vesical home for forty years; here are numbers, from two to forty-two, smooth and less formidable in aspect, yet equally painful and dangerous to the sufferer. A momentary glance can sweep over the range; but it is only those who, like myself, have been engaged in such work, that can estimate the days, the nights, the months, the years of anxious thought and labour associated with the results which I have now put before you.

LECTURE X.

OPERATIONS ON THE JAWS.

MR PRESIDENT AND GENTLEMEN,—Amongst the novelties and improvements of surgery in the present century, few rank in magnitude and importance above those associated with the pathology and treatment of tumours of the jaws. Judging from what might be seen some thirty or forty years ago of large tumours in connection with these bones, and what was said on such subjects by earlier authors, we need not hesitate in coming to the conclusion that little was done in such cases, and that nature was permitted to take her course. Here are casts (figs. 76 and 77) on which I have often looked with interest, and with a sigh that surgery had done nothing to relieve the unfortunate bearers of such tumours. I know not the history throughout, but in all probability years of misery and lingering death were the concomitant and result. Even although the features of the face elsewhere are emaciated, and although death may have been caused by the disease, I doubt if there was malignancy here in the true pathological meaning of that word; and I believe, had such cases been seen in recent days, that modern surgery would have stepped in and arrested the progress of these formidable-looking tumours.

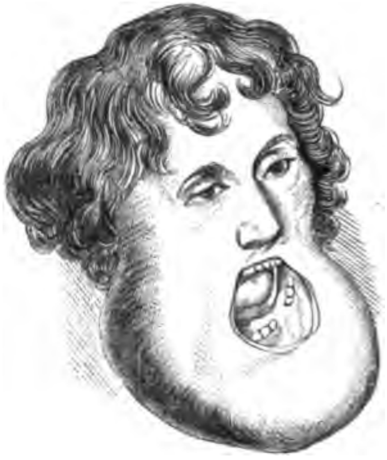

Fig. 76.

Of all innovations the operations for removal of tumours of the jaws have created the greatest impression on my mind. There is little active excitement

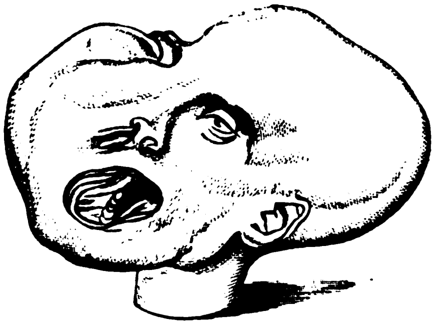

Fig. 77.

associated with the operation of lithotrity; and ovariotomy, although involving the life of the patient, and demanding both energy and courage on the part of the surgeon, cannot, as regards performance, be considered a high-class operation. But for the perfect removal of these tumours, I am inclined to think that the highest requirements of operative surgery are called forth. There is such variety of manipulation, such necessity for caution, yet such boldness in action, that, in my opinion, neither removal of ovarian tumours, nor of the most formidable growths in the scrotum, can at all compare in scientific accuracy with those upon tumours of the jaws.

Whatever may be thought on these matters, there can be no doubt of the value and importance of the operations; and as it has fallen to my lot to have had considerable personal experience in such cases, I feel that I can scarcely do better than devote one of these lectures to the subject.

The anatomy and physiology of the jaw bones, as also their pathology, from shape and function, may be considered as in many respects different from other bones of the body. The association of the teeth with them is a physiological phenomenon, and forms an element for mischief, or, to use a more appropriate term, disease, such as is absent in all other bones. Yet I am doubtful if the teeth really induce much mischief in these bones. The varied ails to which teeth are liable may, and generally do, leave the jaws unscathed; yet, when tumours are present, a question is often raised as to the injurious influence of certain teeth. The abstraction of a tooth in such a case is merely fencing with the outside of the disease. In irritation of a socket this doubtless may do good, although at a sacrifice which time might possibly save, but I cannot say that I have ever seen the removal of a tooth produce any substantial benefit in the cases under consideration. The tumour itself must be removed if good is to come from surgical interference. I trust that I am not less acquainted than my neighbours with common-sense surgery, but I never saw a tumour of the jaws dispelled by constitutional treatment. In doubtful cases, and where there has been much derangement of health, I have seen favourable changes, in time and through judicious management. I have even seen a case, where, to all appearance, a tumour was malignant, deep-seated, and beyond all hope of a cure, either by nature or surgical interference;—such an opinion was given by one of the best surgeons of the day, and such, I confess, was my own;—yet in the end it proved to be only a chronic deep-seated abscess, which burst, and got well spontaneously. Such mistakes do little credit to surgical diagnosis, and let us hope that they are of rare occurrence.

But I wish now to refer to such cases as are beyond the power of hygiene, and where a process of removal is decided on. Caustics are of little value, ligatures out of the question; in short, whatever enthusiasts may think of their skill in treatment constitutionally or locally, I wish to speak solely of those requiring cutting for their removal—I wish to speak of excision of portions or of the whole of the jaws.

I have selected this theme on the present occasion, partly because it is illustrative of the progress of surgery in the present century, and partly because I imagine that my favourite conservative practice may be as usefully developed here as in any other region of the body, or in other cases of surgery.

The first and early operations for removal of tumours in or of the jaws, initiated by Dupuytren, Gensoul, Hodgson, Wardrop, Lizars, Syme, and others, produced great sensation in the surgical world. In cleverness of conception there seems scarcely a doubt regarding them in the present day; and in vigour of execution they have not yet been surpassed. Yet, even here, it may be doubted if perfection has been achieved; and I venture to make—indeed, I may say, reiterate—my humble contribution towards it; for most that I am now about to say has been stated over and over again in my clinical teaching.

I have no doubt that in diseases of the jaws operations have been performed when they were not warranted; and I am equally of opinion that they have been neglected when they might have proved of the utmost value. Here, as in other departments of surgery, perfection will probably never be achieved. Mistakes and improprieties will occur even in the best regulated minds and hospitals. I make no pretensions to be above them myself; but, by way of originality, I shall plead for a share of conservatism, even here, where it has been comparatively little thought of.

Happily, cancerous tumours of the lower jaw are somewhat rare; but cancerous ulceration, beginning in the gums, or more probably extending to them from the cheek or lips, is by no means uncommon. When the surgeon can encompass the disease in the cheek or gums with the knife, he may clip away the alveolar ridges with good prospect of a satisfactory result, provided the disease be of the kind called in modern days "epithelial." If there be no glandular affection in the neck, the operation is likely to succeed, just as with cancer of the lower lip; but where that kind of cancer has eaten away the lower lip, and laid hold extensively of the bone itself, I deem excision a misapplication of surgery. There is not the smallest chance of a permanently successful issue. I have known this done, and even a flap of skin brought from the neck to fill up the gap; but I doubt the wisdom of the proceeding.

I look upon the lower jaw as giving the most forcible examples of the value of a doctrine which I have long advocated—albeit, contrary to the opinions of many, possibly even against the ordinary doctrines of surgery. In one of my lectures last year I referred to this. Tumours of the lower jaw are often removed by vertical section, and both ends, so to speak, of the bone are left. Every one knows how successful these operations usually are. When a section is made in the healthy part, it may truly be said that disease seldom if ever returns. Yet this feature is totally lost sight of in the bones in other parts; and so if a tibia or fibula be affected with tumour, nothing but total ablation will satisfy. Amputation in the thigh is the step. If the femur is affected, the hip-joint only will suffice for the sweep of the amputating knife; and a like pathology prevails in regard to other long bones. But in the lower jaw the surgeon will cut out an inch or two, or two-thirds, of the bone by transverse section, and the pathologist, very properly in my opinion, says not a word against the proceeding. I had great pleasure last year in referring to Mr Syme's views on this subject, whilst alluding to his novel and bold operations on the scapula and head of the humerus, which he performed with a view to preserve the greater part of the upper extremity; and my own impression is so strong in regard to this, that I actually advocate horizontal section of the lower jaw when it appears practicable. If only as much, in a state of health, can be retained as shall in some measure preserve the shape of the lower part of the face, so as to prevent the collapse which takes place when the whole mental portion is taken away, I fancy that the surgeon enacts a good example of conservatism.

Again, in operations here, it has been much the custom to make the incisions run into the mouth, thereby involving division of the lower lip. Now, although I do not mean to deny the occasional necessity for this extensive wound, I am strongly of opinion, from my experience, that there is no urgent necessity for division of the prolabium. The mobility of the lips is such that if the mucous membrane of the cheek, which runs to the gums, be divided, the labial orifice may be moved extensively,—so extensively that any reasonable manipulation may be effected on the jaw itself. I know that this limitation has been occasionally resorted to,

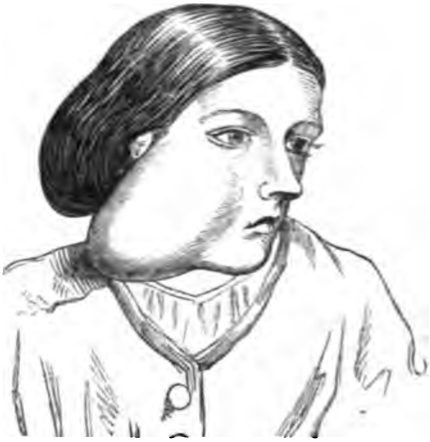

Fig. 78.

but it has not been specially referred to as an advantage. I am, however, convinced, that even in the

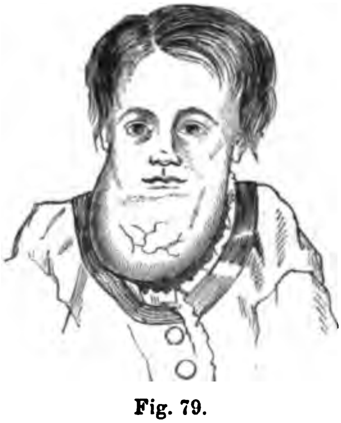

Fig. 79.

removal of the largest tumours—such as this (fig. 78), or this (fig. 79)—there is no necessity for the extensive excision referred to. It may be asked—What does that extensiveness imply? It may be only a quarter of or half an inch! and the question is just such as I desire to answer. Besides saving the lip entire, the principal blood-vessels—the labial artery and vein—are untouched; and so there is neither trouble as regards re-adjustment, nor hæmorrhage, as when the lip is cut. If it be needful to cut vertically through the whole thickness of the bone, I fancy that the operation can be done by a lunated incision, just below the lower margin of the bone, with ends reaching upwards, as represented in these sketches (figs. 80 and 81), almost as readily as if the mouth were opened at the lips,—the semilunar flap being so easily turned upwards, whilst the division of the mucous membrane will sufficiently relieve the cheek as to let saws and cutting forceps be applied to the bone. If a tumour involves much of the

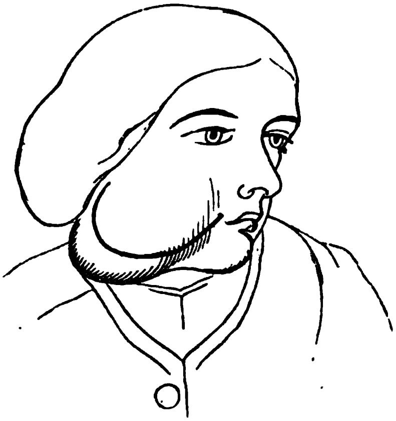

Fig. 80.

base, division of the facial or external maxillary artery is a necessity. It is from this vessel alone that severe hæmorrhage is to be expected, but by tying it at once, or by judicious temporary pressure, there need be no fear on this point. When a ligature is used, I strongly advise that both ends of the vessel be tied, for in one instance I had great trouble from secondary bleeding from the upper end of the vessel eight or ten days after the operation.

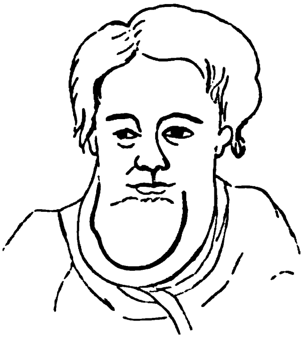

Fig 81.

But I am more anxious to refer to operations on the upper jaw than on the lower; for I fancy that I can say fully more that is original in regard to these than those on the lower. I am as strongly conservative here as in other parts of the body; and in this locality I use the term in a double sense, both because I think that parts may be retained which have generally been removed, and because I think that even the features may be more effectually preserved by certain steps than by others.

The modern idea with regard to the removal of tumours in the upper jaw has been associated with excision of the whole of that bone; and the operations of Gensoul, Lizars, Syme, and others, who were the earliest advocates of this proceeding, seemed to imply the absolute necessity of removing the whole of it. The essence of the operation, so to call it, consisted in isolating and cutting through parts of the extreme points or circumference of the bone—even the sacrifice of the malar bone by dividing the zygoma. The round bulging part of the bone behind at the pterygo-maxillary fissure, the orbital plate, its margin or whole extent, the nasal surface, and the palatine plate, were all marked out for removal in excision of the upper jaw. Now, whilst not inclined to call in question the propriety of what was done and advocated by these early operators, I fancy that a better style of surgery has made such sweeping proceedings scarcely needful. It does not appear that much was done in former times for the removal of such growths. A few rare cases have been recorded on which operations were performed; but such proceedings were far between, and had no position in the roll of our operations. So, when modern surgeons began the excisions now so extensively recognised, tumours of a large size were more frequently met with than in the present time; and hence, perhaps, the necessity of reaching those outside points that I have just referred to. But in recent days the surgeon interferes at an earlier date, and before a tumour has implicated the bone extensively. It is in such instances that I believe there is room for improvement both in diagnosis and practice, and it is here that I make so bold as to propose that which I conceive to be different from ordinary accredited proceedings.

In operations on this bone, as on the lower jaw, and as with bones in other parts of the body, I take the liberty to protest against the doctrine that the whole bone must be taken away when there is tumour present. Indeed, it is largely in consequence of what I have seen in the maxillæ that I have come to the practical conclusion that total excision is not always needful in the case of tumours.

Again, I express my conviction that, in removing diseases of the upper jaw by the extensive separations referred to, the modern surgeon has been amply justified; but I feel equally confident that in many cases there is, or has been, no need for such destructive work. The malar bone, for example (separated, be it observed, by an articulation from the maxilla, and therefore not within the scope of certain so-called physiological or anatomical laws) has often been removed, although there has been no trace of disease upon it; but all for the sake of making sure of the total extirpation of the jaw-bone. Now, I make bold to say that all this destructive surgery may in many instances be avoided, and that partial excision will prove, on the whole, as effective here as I am convinced it does in other parts. In certain instances the malar bone may be saved; in others the surface next the pterygo-maxillary fissure need not be interfered with; in many the floor of the orbit need not be touched, nor the nasal surface, nor the palatine plate. Much regarding these views will depend on the individual character of the disease; but of this I am convinced, that in the majority of such cases one or other of these parts may be saved. It is scarcely possible to overrate the advantage of saving one or more of them, nor do I doubt that a general feeling must be on my side in this opinion. But the question may be asked, How can such parts be saved? My answer is, to let them alone when they do not seem to be involved. But, again, it may be asked, How can you let them alone if division is to be effected at such extreme points as the zygoma, at the outer side of the orbit, the apex of the nasal process, the junction with the other maxilla in the mesial line at the alveoli below the septum, along the roof of the mouth, and also at the palatine junction with the palate bone? Hard questions, seemingly! yet, in my opinion, as easily answered as anything associated with conservative surgery. Just take away that which is in disease, and leave that untouched which is in health.

But, supposing the doctrine which I advocate admitted, how can this be done effectually? And here I come to one of the chief objects of this lecture. My view is, that instead of attacking disease of the upper jaw at its circumference, as has been the almost invariable practice since Gensoul's proposal to excise the whole bone, it is better to get into the disease as it were, and cut from the centre to the circumference, making sure that in doing so, that circumference shall be thoroughly encompassed. But where, it may be asked, are the instruments to do this? It was an old practice with the chisel and mallet, but it did not answer! These are the instruments (figs. 82, 83, 84, and 85), small saw, bent forceps, and gouge. The saw

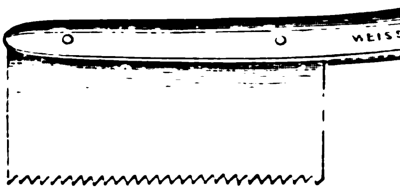

Fig. 82.

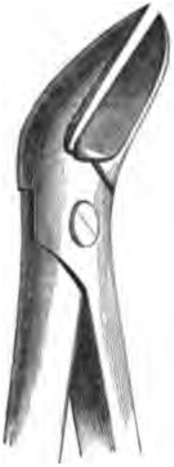

Fig. 83.

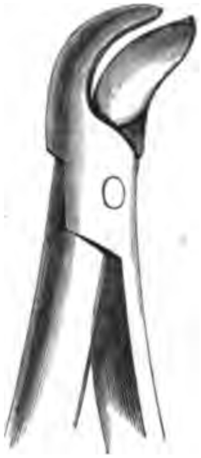

Fig 84.

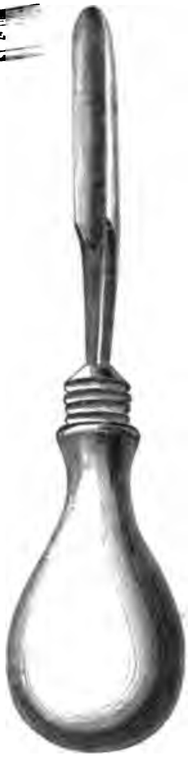

Fig. 85.

(fig. 82) commonly called Hey's, these bent forceps (figs. 83 and 84), and the gouge (fig. 85), are almost essential to the process I am now referring to. The saw may be dispensed with, but the forceps and gouge are well-nigh absolutely requisite. My opinion is, that in such operations, if the great mass can be removed by adequate cuttings at convenient parts, any remaining portions may be readily clipped away by such forceps as these, or scooped out with the gouge; the rule being to clip or gouge until healthy surfaces are reached; and if this cannot be done, for fear of going too deep, then the surgeon may conclude that the disease has gone further than he calculated, and that it is beyond the reach of operation. By such a course as I have now indicated, I have frequently cleared the upper jaw of its diseased deposits, and left both orbital and palatine plates entire, and, as a matter of course, the posterior surface. The nasal side of the bone I have never taken much into account in these cases, for I think it of little consequence compared with the intention and magnitude of the operation.

Associated with these views, and with the style of surgery implied, I must endeavour to impress some further points which I humbly consider almost as important as those to which I have just referred.

There are no incisions that I know of in operative surgery—not even excepting that for ovariotomy, which in reality is a bugbear—so frightful to behold as those for removal of the upper jaw. This (fig. 86) represents Gensoul's; this (fig. 87) Lizars'. There have been few modifications of these, and that from the angle of the mouth towards the zygoma has been the favourite, when the tumour has not been very large. If it has been large, then such incisions as these (fig. 88) have been most in esteem: that from the angle of the mouth to the zygoma, and another from the margin of the lip immediately under the ala in a direct line upwards to the inner canthus, and thus a sort of triangular flap of the cheek has been raised off the tumour. I have frequently practised all these plans, with the exception of Gensoul's, which I have always avoided in consequence of its destructive character as regards features; but for many years I have found that less extensive incisions will suffice, particularly if placed as I imagine

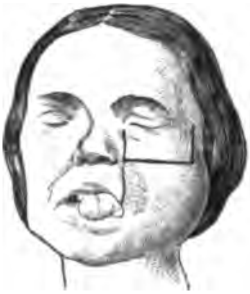

Fig. 86.

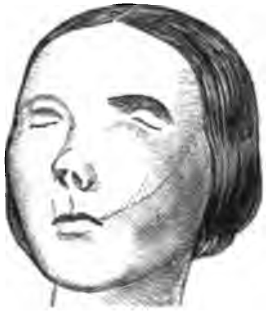

Fig. 87.

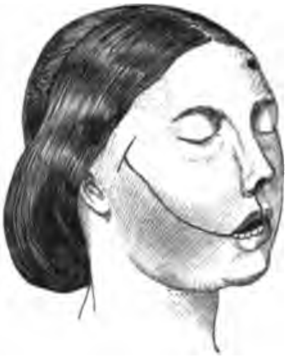

Fig. 88.

they should be. The wound from the angle of the mouth to the zygoma is, I think, the most objectionable of all, the cicatrix being conspicuous ever after.

After all my experience and repeated trials, I have latterly formed a strong opinion that the features of the face may be better preserved than as yet by the generality of surgeons; and my anxiety to impress these views is certainly not the least object of this lecture. First, I consider that many tumours of the upper jaw may be summarily removed without cutting the lips or cheek at all; and next, should more space be needful, it may be gained at less cost of feature than has generally been supposed. In dealing with the upper lip for removal of tumours of the upper jaw, I greatly object to any other incision than one in the mesial line, which must be run into one, or both nostrils if required (as represented in fig. 89), in which instance the tumour involved as much of the roof of the mouth as is shown in fig. 90. There are two advantages of great importance, in my opinion, associated with this incision.

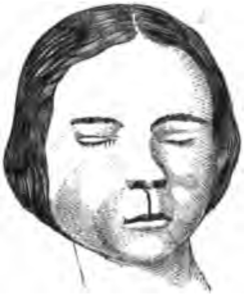

Fig. 89.

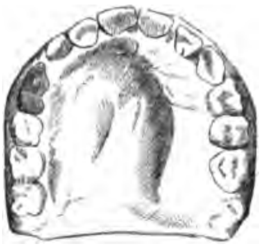

Fig. 90.

First, the wound, being made in the furrow below the columna, and exactly in the middle of the lip, is less observable than on any other part; and next, there is an inch in length gained by the natural opening of the nostril. The ala of the nose is so easily raised, and with the tip can be so easily moved according to the will and wish of the operator, and the cheek can be so readily dissected off the tumour as high as the margin of the orbit and as far out as the malar bone, that a large space for operation on the anterior surface of the maxilla is easily made. Since 1848 I have never made any other incision in the upper lip; and I have no hesitation in stating, from large experience, that in a number of operations for moderate-sized tumours there is no need for more extensive incisions on the outer surface of the face. I have removed even such a large tumour as is here displayed (fig. 91), through a single incision in the upper lip like that advocated.

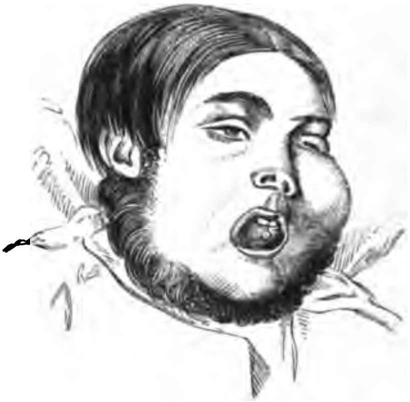

Fig. 91.

Should it so happen that, the tumour being large, more room is required, I am further led from my experience to prefer an incision alongside the nose, and a horizontal line as here (fig. 92) indicated, to those of Gensoul or Lizars on the cheek. By these incisions through the lip, up the side of the nose, and along the lower eyelid, as far out as may be needful, say even to the zygoma, all the room required for the removal of a large tumour may be secured, and the most conspicuous part of the cheek may be left untouched. Another great advantage which I claim for these incisions is, that the chief vessels of the surface are all divided at their narrowest points, and thus hæmorrhage is less severe than when the facial artery is divided in the middle of the cheek, as in the common incision.

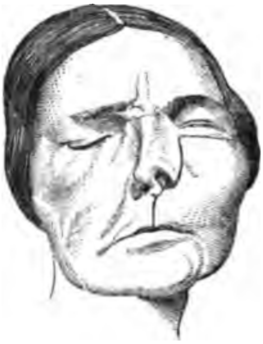

Fig. 92.

I am unable from want of time to dwell longer on this subject; but, before concluding, I must state my impression that the views regarding operations on the upper jaw, to which I have now drawn attention, and which, whether for good or for evil, I must claim as my own, cannot be carried out excepting by the use of such instruments as are here shown (figs. 82, 83, 84, and 85). The Hey's saw and the gouge were familiar to surgeons before my time. The straight cutting forceps, depicted by Scultetus in former years, and brought into fashion in modern surgery by Liston, are of limited use in such instances; and where prejudice or ignorance does not prevail, they may be said to be entirely set aside by these angular ones (fig. 83), which effect all, and even more than the straight ones. But in particular these semicircular clippers (fig. 84) will be invaluable; and, with curves of different circles, the largest tumours may be circumscribed by them. If even some of the tumour should not come away with the mass, the blades will enable the surgeon to remove the whole, and clip upon the healthy surface.

Whilst recommending these angular and semicircular forceps, which I claim to have originated for surgical purposes, I cannot omit referring to these additional blades (fig. 93) as being of the greatest imaginable value

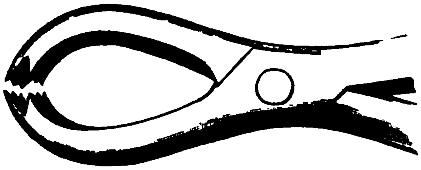

Fig. 93.

in the removal of some tumours in the upper jaw. A quarter of a century ago, in imitation of an older custom, small hook-beaked blades were used for seizing arteries, on stumps and other open surfaces, when ligatures were required. They were likewise of use in seizing and holding small tumours during removal. It was Mr Liston who, I believe, gave them the name of the bull-dog forceps. In my early experience in operations on tumours of the upper jaw, I had observed the difficulty of separating them, even after a free use of saw and forceps; and this instrument was a device of my own to facilitate that step. The commanding size and strength of these blades give facilities for wrenching out a tumour of the upper maxilla previously unknown. Their grasp is such that, in comparison with the others, I called them the lion forceps; and they are now well known under that name, although not so well by my own; for it is not long ago that a London hospital surgeon, who, being provided with one of them for an operation he was about to perform, asked me if I had ever seen the instrument, and kindly directed my attention to it as one of peculiar merit! In operations on the lower jaw it will be found of wonderful service in keeping all steady during the application of the saw or in disarticulating; and in various operations elsewhere, when a stronger catch than the fingers can give is required, their use in my hands has added largely to the value of my digital resources.

In the preparation of this lecture I had sketched the chief features of diseases associated with the jaws, and particularly those associated with the antrum; but I found it impossible to keep all within the appropriate limits, and, being anxious during such an opportunity as this to state my views and practice when operations are required in such cases, I have thought it best to omit that which, in my estimation, had less of the aspect of novelty than the portion which I have now submitted to your notice. You may have observed that here, as in certain other departments of pathology and operative surgery, my mind takes a strong local bias, and I advocate what some may think or call restricted measures, in preference to those of a more sweeping kind, which involve the destruction and loss of a considerable amount of sound substance around. I trust that I shall not be misunderstood here. I advocate the removal of all disease when an operation is really undertaken for tumours. If there is no malignancy, there is, according to rule, no need for taking away more than the disease. If a sound surface is left, that is all that the surgeon need care about. If the disease be malignant, I have great doubt if cutting widely beyond it makes much, if any, difference as to its return; and this pathology I apply particularly to malignant tumours in bone, for very generally when there is a return, it shows in the soft parts more than in bone. Of course I willingly admit that every now and then the renewed mischief really does come in the bone; but that feature should, in my opinion, contribute to form the exception rather than the rule for such operations as we have had under consideration today. In addition, and in some degree to give reasons why I advocate conservatism in their performance, I may state that I entertain views as to the original and early seat of many of these tumours about the antrum which are in some respects peculiar. Most surgeons, I believe, have an impression that when a person is said to have a tumour in the upper jaw, or, to be even more precise, in the antrum, the whole of this cavity, with its walls, is so involved, that in any operation for removal there is an absolute necessity that this circumference—the walls of that cavity—must be taken away. Now, it is my opinion that disease in the antrum, beginning in the cavity as it were, is much more rare than most people think. My impression is, that in many, if not most, instances the wall of the antrum is the part first affected, and that its cavity is gradually filled by the growth, and then perhaps expanded. Actually, in some instances, so strictly local is the disease that the antrum may be in a manner displaced and compressed, whilst its mucous lining remains without indication of disease. This I have particularly noticed in tumours which have had their origin in the alveoli; and I have seen frequently growths of considerable size here which have projected forwards, downwards into the mouth, and even upwards, and yet have left the antrum scarcely if at all involved. Any part of the circumference of the antrum may be the original seat of a tumour, and if such tumour be attacked by an operation at an early date, I maintain that it may be removed, and the rest of the antrum or jaw be left. If it so happens that the tumour is chiefly associated with the posterior wall or part of the antrum, the diagnosis will be more difficult, and if an operation is performed, the destruction of comparatively sound parts in front must be extensive in proportion; but if the tumour happens to be at any other surface, it is in my opinion of great importance to reserve as much as possible by removing only the offending part. It is, unfortunately, too often needful, owing to the extensive development of the disease, to remove all between the tongue and the eyeball; but cases are frequently met with of a more limited extent, and if the surgeon follows the practice which I have ventured to characterise as a modern improvement—viz., to interfere at a reasonably early time, so as to arrest the tumour in its onward progress, he may remove the disease, and yet save the greater part of the upper maxilla. In one case the sacrifice of only the inner or nasal wall of the antrum will suffice; in another the front may alone require removal; again, probably the floor of the orbit or roof of the antrum may be involved, or possibly only the lower part of the antrum—that is, the roof of the mouth, with, perhaps, the alveoli. To save the floor of the orbit, as happily may often be done, is in my opinion of great importance; but of all these local operations that I am now advocating, that of removing disease, and at the same time preserving the roof of the mouth, is the one of most importance in my estimation, and, where the extent of disease will permit, the surgeon should make every effort to do so. I have known a sound alveolar ridge, a perfect set of teeth, and one side of the roof of the mouth, all sacrificed to get at a comparatively small tumour in the antrum, which could readily have been removed with the sacrifice of only the front wall of the cavity.

But time tells that I must cease, and I shall do so after a few words more.

The dread of hæmorrhage was great in the early days of these operations, particularly when the upper jaw was affected, and it was the custom for a time to begin by tying the common carotid; but that practice was soon given up. Vigour and rapidity of action are the best safeguards against this danger.

Every now and then one hears objections to chloroform in such operations. For my part I have none. I have used it invariably since the introduction of anæsthesia, and I have never had reason to trace evil to it. It has seemed to me a greater boon to a patient in such an operation than in almost any other; for there are few more severe or frightful in the whole range of surgery.

In offering these observations, I speak from a personal experience of between thirty and forty cases. Twenty of them have been performed in King's College Hospital. I did not scruple in my lecture on lithotomy to tell the fatality of that proceeding in my own hands; nor need I hesitate here to remark upon the seeming comparative immunity to life of operations on the jaws. There have been returns of disease and ultimate deaths, as with cancers and fibro-recurrent tumours elsewhere; but of the whole list of my cases I have lost only five—a success which, as compared with lithotomy, seems remarkable, particularly when we take into consideration the huge wound in the face as contrasted with the limited incisions in the pelvis.

At one time, Sir, before the cares of life were deeply felt, I occasionally said that my thoughts, during waking hours, were never five minutes consecutively off my profession. With an indifferent memory for many things, I fancy, if I can judge myself aright, that I have a tenacious one in surgery. It is well-nigh forty years since I, as a lad, first witnessed one of these operations on the upper jaw performed in the Royal Infirmary of Edinburgh by my late esteemed friend, Sir George Ballingall,* yet my recollection of the scene is as vivid as if it had been yesterday; and I have an equally lively recollection of the exciting descriptions of certain operations on the lower jaw, published by Mr Cusack of Dublin, about the same date.

I end this lecture as I began it, by stating that I know of no operations so exciting and so likely to rivet attention as those which we have just had under consideration.

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* Clinical Lectures, 1827.

LECTURE XI.

ON AMPUTATION.

MR PRESIDENT AND GENTLEMEN,—Amputation! One of the meanest, and yet one of the greatest operations in surgery! Mean, when resorted to where better may be done—great, as the only step to give comfort and prolong life. An operation on which more has been written, if, perhaps, we except lithotomy, than on any other—on which the highest of our intellects have been engaged, and yet withal accounted by some as the opprobrium of surgery.

I have an impression humbly, that few men have done more than myself to obviate its necessity, and yet I profess great admiration for the operation. It is certainly a sweeping measure; yet, although the part removed is no longer of any account in living pathology, it may carry instruction with it. We may profit from its separate inspection; we may be taught thereby to do better in another similar case; but surgical treatment of disease ceases with amputation, and a new field of practice opens. Our duty is with the portion of the body which is left, and that duty is so important, that I know of none to exceed it in the whole range of surgery.

I at once set aside the maudlin sentimentalism about having no amputation, as the disease may, and should, be cured by treatment—judicious, superior treatment, forsooth!—of which we have always plenty of exponents in writing, but few, alas! in practice.

I believe that amputation will never cease to be required in the practice of surgery. When our *quidnuncs* have mastered disease, so that inflammations, cancers, and tumours in bone can be subdued at will; when war shall be only an "idea," a word, an act of the past; when peace shall appear in the Arcadian bliss represented by the brush of Edwin Landseer; when such men as Armstrong, Whitworth, Blakeley, Lancaster, Mackay, Dahlgren, Parrott, Rodman, and Krupp, direct their genius otherwise; when railway accidents shall be no more; when we can arrest time, and calculate on a "renewal of life,"—then may we expect that amputation will be of the past.

It has always appeared to me remarkable that this operation should have been called an opprobrium to surgery. It is indeed sad that a limb susceptible of cure should be removed. It has been recorded that of two diseased legs, one was condemned to amputation. By an awkward mistake that intended to be spared was taken off, when the surgeon, being, as it were, put pressingly upon his mettle, cured the condemned limb! The joke is good, but let us hope that it was "a weak invention of the enemy," made by one of those jesters who affect to hold surgery responsible for everything.

I confess, Sir, that in the biographies of our eminent men I should like more to hear how often amputation has been averted than performed; how many diseased or damaged limbs have been cured instead of being lopped off. I should, for my own part, prefer the character of having saved fifty limbs to that of having cut off a hundred. I am sure that I am not alone in that feeling; and I rejoice to see, as time rolls on, that it has become less the custom to note the large number of amputations at certain hospitals. The schoolmaster is abroad in surgery as in other departments of our social circle, and the question is often put as to how many of these vaunted amputations have really and positively been absolutely necessary. I have myself strong, and, perhaps, prejudiced opinions on the subject; and I would certainly prefer that in the lists of operations we should see those for hernia, for stone, for obstructed breathing, for tumours, for dislocations and fractures, and others, taking precedence of "the last resource." A man or an institution may well boast of some of these proceedings, but he should be surer of his grounds for amputation than was the unfortunate operator whose story I have just referred to. I yield to no man in faith that much may be done in the treatment of disease to avert operation—to avert amputation; but I am firmly convinced that whilst men and civilisation are on the face of the earth, amputation must remain as one of the great operations in surgery.

It need not be a matter of wonder that this proceeding should have attracted so much attention; yet it is curious to think how modern it is as compared with other operations of note. Whilst the herniotomists and lithotomists flourished in mediæval periods, we have no account of amputators. The gentlemen of "the long knife" are of modern date in surgery; for although we have a history of amputation, chiefly for mortified limbs, from Celsus downwards, it was not until about the middle of the last century that this operation assumed the aspect of what may be called the modern system. We are all familiar with the dreadful accounts of the proceedings of our forefathers prior to this period. What with the gradually tightened string, the red-hot knife, to affect separation, and the boiling pitch, actual cautery, and other devices to stem the hæmorrhage, we read of horrors scarcely surpassed by those of the Inquisition, and only exceeded by the modern device of breaking a bone or bones, and burning the soft parts with "caustic arrows," or that of dividing the femur with the chain saw, and tearing the soft tissues through by means of an "infernal machine" call an "écraseur!"

Happily the tendency in surgery, as regards amputation, has been to improve upon the rough work of former days; and, as much has been done within the present century in this direction, I feel that in such work as is now before me, I can scarcely do better than devote a lecture to the subject.

The great wars on the Continent of Europe towards the end of the last century give frequent occasions for this proceeding; and the zeal and intelligence of Baron Percy and other French surgeons, as well as the rising spirit amongst our own, contributed to the interest felt in this proceeding. The sanguinary campaigns in the career of the first Napoleon added zest to the knowledge already acquired; and during a large portion of this century few operations have attracted more attention. After 1815, many surgeons who had been actively engaged with armies began practice in private, and speedily achieved prominent positions in civil life. Then the large experience gained in warfare was speedily brought to book in surgical annals; and ere the close of the first quarter of the century it appeared as if the subject had been exhausted; that we had arrived at perfection; and that those who followed had but to proceed in the same way;—for better could not be, and such evils as remained were but inherent to the process.

Yet such a conclusion was scarcely in the ordinary course of surgery. Inquiring men were at work. It was doubted if we had reached the summit of perfection; and from that time until the present there has been a succession of novelties, as great and remarkable as any in the history of surgery. Indeed, I know not if any single operation has been so varied; and it will now be part of my task to sketch such of these changes as seem to me most deserving of notice.

If I am not mistaken, it was more the fashion, some forty years ago than now, for the young in our profession to finish their surgical studies abroad, particularly in the schools of Paris. The celebrated Lisfranc was then in the zenith of his practice. Chiefly through his influence that particular amputation by flap or flaps had attracted much attention amongst French surgeons, and it was destined to be soon the object of equal interest here.

Although the flap operation was familiar to most surgeons in this country by hearsay and description—although, indeed, it was every now and then performed, it may be affirmed that about 1820 or 1825 the circular was the ordinary method among British practitioners. A picture of a flap operation had probably never been put before the eyes of the rising generation, but such as these (figs. 94 and 95), as depicted by Charles Bell and others, were held to be the master-work. I have already stated, from this chair, that the essays of Mr Liston and of Mr Syme, published respectively in the "Edinburgh Medical and Surgical Journal" for 1824, had great influence in calling attention to the flap operation. The personal example of these surgeons was con-

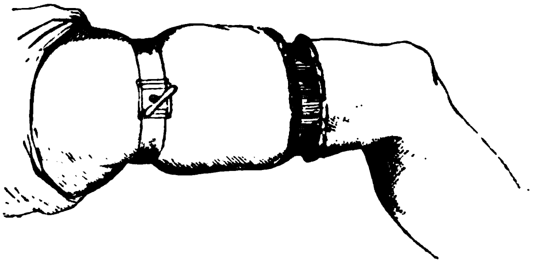

Fig. 94.

siderable, and that of Mr Liston in particular deserves special notice; for, first in private practice as a youth pushing his way in life, and then as the leading surgeon in the Royal Infirmary of Edinburgh, the dexterous manner in which he executed this now familiar method arrested the attention of all beholders, and the fame attached to this proceeding, executed by him in about as many seconds as there were minutes occupied in the old circular method, spread far and wide. To say nothing more of the man, the manner of the operation was indeed remarkable for the time; and it should be borne in mind by those who have been educated in isolated or comparatively small schools, or even large hospitals, that the united classes of Edinburgh in those days numbered, when assembled in the theatre of the Royal Infirmary, something like a thousand—nearly equal to the whole of the medical schools of London at the present time. No wonder that an operation which,

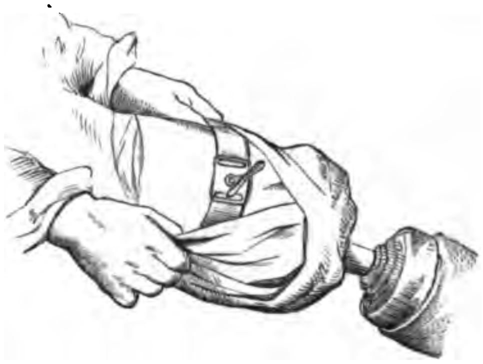

Fig. 95.

with the knife wielded by Liston's hand, seemed, compared with the old manœuvres, like a flash of lightning, attracted great attention, and that numbers attempted to imitate such an example. Besides, it was almost the only one practised by the other chief surgeons of that time in Edinburgh, and so its reputation went in all directions. Not a whisper was heard against it in Edinburgh; yet, whilst it spread with meteor-like rapidity over the British Empire, there still remained many staunch upholders of the circular method. Rapidity of operation went with them for nothing. The good old method described by Roux in his "Parallel" as obtaining in London, in which some twenty minutes were expended in doing that which was done by Liston and others in little more than the same number of seconds, was still adhered to; and the "*sat cito*" school remained contented with the old order of things. Not so, however, the mass of the rising generation in the profession. I believe I am correct in stating that the flap operation became that in common practice, and, in as far as I can make out, it is that in most frequent use in the present day. If we except the substitution of excision for amputation, I know of no more singular and almost universal revolution in modern practice. I say this with all deference to a large body of eminent practitioners who have throughout adhered to the circular operation; for, in truth, whilst I have been all my professional life an exponent of the flap, I have had no such strong objections to the circular as some have maintained. I have seen as good stumps from the circular operation as from the flap; I have seen as bad from the flap as from the circular; and I have long been convinced that a fault, whenever it has appeared, has in reality been more in the manner than in the method of the operation.

Many have the idea that compromises are improper; that they are indicative of weakness and want of proper spirit or energy; that men must be either on one side or the other; that things must be positively of one character, or directly the opposite. But men and things under such circumstances remain very stationary; it may be in some instances for good, but generally for the reverse; and to keep moving with the times seems almost a law of society. The spirit of surgery is essentially this, and the surgeon who is content to rest under the hallowed shade of his predecessors must find himself in the obscurity of remote periods as compared with the sunlit movements of the time being. Liberty of thought is allowed us all, and a large scope of liberty of action; but, in reality, our whole social system is founded on a series of compromises, and the "uncompromising man" is, in my opinion, one of the greatest of nuisances either in surgery or in society.

A compromise, I imagine, goes far to settle what may be deemed the best method of amputation in such important places as the arm and thigh. A portion of the flap and a portion of the circular constitute, I believe, the most perfect operation; and in my own practice I have long followed out that idea.

Of the two operations, I have always thought that the circular is the most difficult. The comparative difficulty of drawing up the skin and other tissues, so as to make bare the bone at a sufficient height, is considerable, and a great contrast to the easy way in which this is accomplished by flaps. The facility of exposing the bone high up is comparatively so great with flaps, that I am impressed with the idea that more is often done in this way than is actually required; and, if I am correct in this, I believe that a larger wound is the result than if the bone were not so freely exposed. If in the transfixion of the limb—that being the usual way of forming the flap—the knife crosses almost as high as where the bone is to be divided, there is a greater wound made than if the transfixion were kept considerably lower: the skin on opposite sides, being cut, is wounded where it might be left entire; for after flaps of moderate extent are cut, they, with the tissues above, may be so pulled upwards that, with some circular sweeps of the knife the bone may be denuded an inch or two higher, and so there will be a smaller opening in the skin.

Now this is that kind of compromise to which I have referred in the preceding remarks; and if, in transfixing, the flaps be made purposely short, and then, retraction being made, the knife be carried round the exposed tissues which cover the bone, a cone will be formed resembling that in the ordinary circular operation (fig. 95), and thus by a combination—a compromise of the two methods—a covering to the end of the bone, in other words a stump, will be left superior, in my estimation, to any other.

Yet this is only an individual opinion, and there are many who hold to the ordinary method by flap, many who still hold by the old circular, and some in recent days who carry the flap system beyond what was ever contemplated by its early advocates. Thus Mr Carden and the Worcester surgeons take especial care to exclude other soft tissues, so that skin only shall cover the bone or bones.

Irrespective of either circular, flap, ovoid, or any other sort that may have been fancifully named, I think it must be admitted that amputation by almost any fashion has made progress during the present century. I take this opportunity, however, of entering my protest against that of burning or wringing a limb off by any kind of apparatus whatever. Cheselden gave us the case of the miller who had his arm and scapula torn off by machinery, and yet survived. Several instances of a similar kind have since been met with. We have good data as to how the bleeding is arrested in these cases. Hands and arms, feet and legs, have been torn off by accidental rude force. A chain has been put round a rabbit's leg and drawn so tight that the part has dropped off within a few minutes, and the like has been done on a human thigh; but I sincerely hope that these processes may never appear as part of the surgery of this or any other century. Let Cheselden and others have due credit for treating successfully enormous and unheard-of wounds, but let a due distinction be drawn between that which is possible and that which is proper.

With the exceptions alluded to, I conceive that there has been much beneficial progress in amputation in recent times, and it is part of my object in this lecture to give illustrations to that effect.

As may have already been remarked, I do not attach so much importance to the question of flap or circular as many do; and whilst giving the preference, as a general practice, to the mixed manner above referred to, I believe that with a well-performed operation in any of these ways, or with any zig-zag which circumstances or the surgeon's fancy may dictate, a stump can be produced which shall defy adverse criticism; while by any of these methods, badly executed, any or all of the evils pertaining to bad stumps may be the result.

In my younger days, the grand effort of all operators, whatever the kind of operation, was to have an abundance, or I might say a superabundance, of soft material to cover the end of the bone, and make what was called a fleshy stump. The bugbear in those days seemed to be the risk of scantiness in this respect, and hence every substance was looked to which might afford the needful amount of soft materials. Every now and then it was evident that mistakes were made in this direction: a greater length of soft parts was left than was needful; and occasionally, when the length seemed perfect, the flap was actually too thick to bend readily and properly up against the end of the bone or bones. This was often seen particularly marked in the flap operation in the leg, a little below the knee—a proceeding at that period mostly in fashion. If the operation were done for an accident—for example, on an athletic navvy,—a flap being formed by transfixion from the muscular calf often proved a troublesome one to treat (fig. 96). The skin by this method of operation, although in reality cut lower down than the muscles, retracted more; and although that retraction was seemingly overcome in the dressing, as stitches were applied, the subsequent swelling of the muscles often burst the superficial union, and, shooting between the margins of skin, presented for weeks or months a large granulating sore, which healed but slowly, much to the distress of the patient and vexation of the surgeon. I remember well that Mr Liston was so much annoyed in this way, that he latterly made the posterior flap in such an operation much thinner than on former occasions; and I can speak freely of my own experience in the same operation. It is long indeed since I came to the conclusion that it was unwise to leave a thick muscular flap. Part of the fault in such cases arose, I believe, in the almost

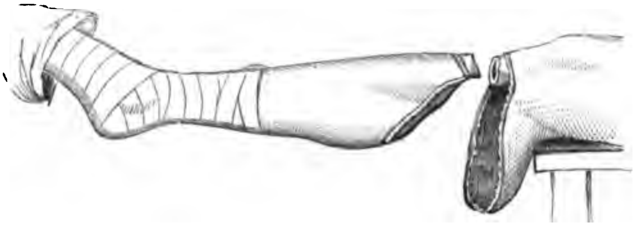
Fig. 96.

uniform practice of transfixing and cutting outwards. I am by no means convinced that this is invariably the best method of performing the flap operation, and I feel assured that cutting from without inwards is in many instances followed by the best results. But I may say that I have seen the two extremes with regard to the substance of flaps, for in latter years some of our ablest surgeons have advocated the practice of carefully excluding all material but skin, cellular tissue, and fat. We are greatly indebted to the surgeons of the Worcester Infirmary, Messrs Carden, Sheppard, Budd, and Walsh, for our knowledge of upwards of sixty such cases, wherein the practice has given much satisfaction.*

It would be well in all discussions about stumps to state the age of each. It is not easy to say when a stump is at perfection. My own idea is, that that is when it is least tender, and can bear the greatest reasonable pressure. Many months, sometimes years, elapse before this condition is most marked. In many or most instances it looks best when some two or three months old; but look or appearance is not perfection in a stump: its utility, its callousness, I may say, are its better attributes, and these cannot be developed for many, many months after operation. It is a common thing for surgeons to speak of an excellent stump some three, four, or six weeks old. True, one that promises well at that date may, and indeed is likely to, turn out well in the long run; but many unfortunate things may befall after this, and I think it best to look to its condition some years afterwards, for it is then that utility is tested, and this character must ever take precedence of plumpness or beauty, as we fondly call it.

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* British Medical Journal, April 16, 1864, vol i.

I am not aware of much change in recent times upon the circular method, and am inclined to think that, upon the whole, those who follow it are thoroughly content. But amongst the flap-men considerable changes besides those above referred to have been tried. One flap has occasionally been made instead of two, or two instead of one; and instead of looking to one place or side of the limb, the flap has been made from any most suitable. Thus, one long flap has been taken in thigh, leg, and forearm, and two have been occasionally taken in the leg, one in front and one behind, or one on the outside and another on the inside, as I have seen. Yet, if we except the proposals of Mr Teale, there has been considerable unanimity. The old single flap from the calf of the leg, the lateral flaps in the thigh, the lateral (as they may be called) in the arm and forearm, may be considered as having been the standards of the kind for the last forty years.

Some interesting exceptions to this practice may, however, be referred to. I well remember when, in amputation in the thigh, the only supposed legitimate method was to reserve a flap from each side [referring to various sketches]. If the knife in piercing did not seem as if it had passed straight from front to back, or, looking to the patient being recumbent, from above directly downwards, having about the same thickness of material on each side, it was doubted if the operation had been correctly performed. Yet I have subsequently seen all sides of the thigh reserved as opposites; in particular, that pains have been taken to make the flaps actually in front and behind. And, if I am not mistaken, this has been the favourite flap operation in the thigh for the last twenty years and more. Yet its reputation is, I fancy, on the wane; and there is a rising feeling to preserve a long anterior and short posterior flap, in accordance with certain views of Mr Teale and Mr Carden, both because of anxiety to keep the cicatrix at the back or lower part of the stump, as also to facilitate the escape of serum and matter whilst the patient lies on his back. In former days, the aim was to have the cicatrix fairly in the middle of the stump; but in recent times the desire seems to be to have it on one side or other. I cannot but say that I look most favourably on this latter plan. As a rule, the original tissues are better than a cicatrix; and some interesting examples of this have been developed in modern times, of which I shall take special notice in a few minutes.

Some of these recent views I attribute largely to the proposals of Mr Teale of Leeds, who, in this, as in other respects, has contributed so much to the established reputation of that school of British surgery. In a series of examples he has endeavoured to show the advantages of long flaps from one side of a limb, wherewith to cover the ends of bones, and short flaps in which the main vessels and nerves are preserved, as exemplified in these sketches, copied from his work* on the subject. Fig. 97 shows the lines of incision for amputation in the forearm; fig. 98 those in the leg; and fig. 99 those in the thigh.

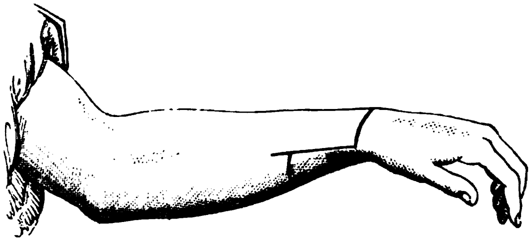

Fig. 97.

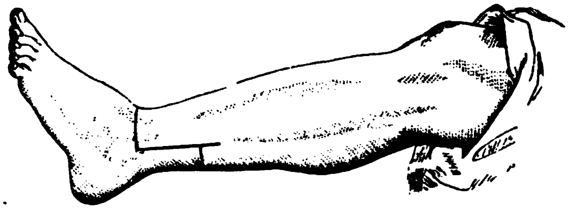

Fig. 98.

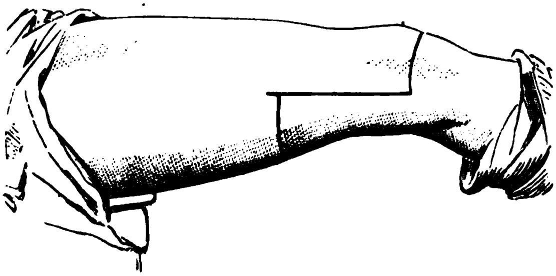

Fig. 99.

It might be thought that a good thing in surgery having been secured, there would be no desire for change. But there will, I suppose, always be difference of opinion as to what really is a good thing; and I am led to make this remark by the views expressed by the latest author on amputation, Mr Henry Lee, of St George's Hospital, who, only a few nights ago, read at the Medical and Chirurgical Society a paper expressive of the advantages of a long flap from the back of the leg, a short one from the front; the two operations being identically the same, excepting that the flaps are from reverse sides. Each author insists on the wisdom of so dividing the main vessels and nerves that they shall not be exposed to after pressure, and each making a feature of the angles at the ends of the flaps, in contradistinction to the semicircles or ovals of the ordinary flaps, such as represented in fig. 96, or in this (fig. 100), which shows an amputation by transfixing lower down the leg. One cannot but perceive novelty in Mr Teale's flaps—being taken generally from the least muscular

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* Teale: On Amputation, 1858.

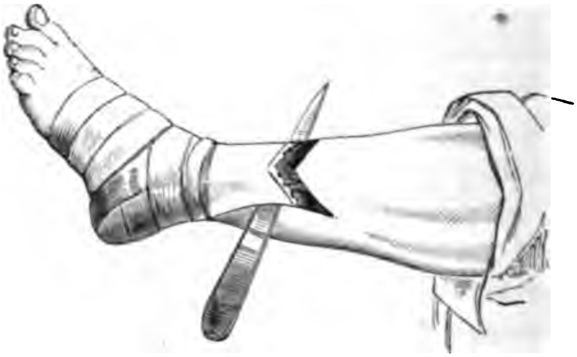

Fig. 100.

side of a limb; but in Mr Lee's we may recognise old friends, with the features rendered somewhat angular.

In nothing in practical surgery has there been more pedantry displayed than in regard to amputation. In thigh and hip, arm and shoulder, it has been made to appear as if the deviation of a line might be fatal; whereas, in reality, we may deviate line by line around a limb or joint from vertical section to horizontal, and yet keep strictly within rational, ay, perfect surgery.

But in no respect has amputation varied, I may almost say permanently changed, more strikingly than in what was called the place of election, or selection; and here perhaps I come upon some of the best achievements of surgery in this department in modern times.

Forty, even thirty years ago, the place was rigorously defined in most localities. If a hand or diseased wrist was to be removed, a healthy part of the forearm, generally near the elbow, was selected. If, unhappily, amputation was performed for disease of the elbow, the maxim was to keep well up in the arm, away from inflamed or diseased tissues. If a foot or an ankle were doomed, the long knife was applied high up in the leg. I have often seen amputation performed within an inch of the knee-joint for disease of the tarsus, the leg and ankle-joint being healthy. So rigorously was the inculcation for a short stump of the leg carried out, that I have frequently seen the head of the fibula removed so that it might not remain as a round projection on the stump.

Gradually, however, a spirit of conservatism has arisen even in the matter of amputation; and if I am not much mistaken, there is a strong feeling in favour of long stumps, not only because more of the body is thereby preserved, but because the stumps themselves are more efficient as to leverage, and also as to the enduring qualities of their coverings.

But there is nothing more remarkable in the modern history of amputation than its performance at certain joints. Naturally, it may now be thought that I am about to allude to the great amputations at the shoulder and hip. Not so, however; for I entertain the opinion that these operations have been performed frequently when less extensive measures would have sufficed.

In 1826 Mr Syme wrote that "amputation at the shoulder-joint for caries is an occurrence by no means rare in civil practice;"* and as this was said in his early attempts to press into notice the operation of excision of the head of the humerus—a proceeding then only recognised by a few—it may be presumed that he had fair reasons for this assertion.

I should be untrue to the position I hold were I to decry amputation either at the shoulder or the hip joints. On the contrary, I consider them as amongst the best achievements in surgery when judiciously applied. But I believe that there is still much to be impressed on the surgical mind in regard to amputation at other joints; and with a few examples of the kind I shall close this lecture.

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* Edinburgh Medical and Surgical Journal, vol. xxvi. p. 54.

Happily for the character of surgery, amputation in the arm for disease of the elbow may now be considered obsolete. I feel inclined to say as much for injuries of the elbow strictly local. There may be an exception every now and then to that general rule, as I hope it may now be considered. If such there be, why should the surgeon almost invariably get into the middle of the arm for his incisions? Why should he not take the covering of the end of the humerus from the forearm? If he wants skin only, there will most likely be plenty of it; if muscle, he has the whole fleshy mass at the head and front of the forearm to deal with. I feel convinced that amputation near the middle of the arm has often been done when this more conservative process might have sufficed.

Then at the wrist. How often, may I ask, has amputation been done at this joint? I know that it has been done, but I have never seen it, excepting in my own practice. Every now and then good results of resection of the wrist are effected, as has been proved years ago by Mr Stanley, and more recently by Mr Butcher and Mr Lister; but from my personal experience, after repeated trials, I am far from being sanguine of the general applicability of excision in this locality. Yet I can speak in unmeasured terms of approval of amputation at this part in preference to amputation higher up in the forearm. Here is a stump of the sort —a genuine curiosity, if I mistake not.

Again, look to the knee as the seat of amputation. Twelve months ago I asked, in this theatre, how many surgeons in Britain had performed this operation. I was aware at the time how much had been done by Mr Syme, Mr Liston, Mr Lane, Mr Erichsen, and a few others, but particularly by Mr Carden of Worcester, whose doings, in my opinion, reflect vast credit on modern surgery. In the "British Medical Journal" for 16th April 1864, Mr Carden published the particulars of thirty-one cases in which he had performed this operation, with an expression of opinion that it was likely to be more successful, and that the stumps were better than in ordinary amputation in the thigh. Of that I have long had no doubt. More than twenty years ago I had satisfied myself on that score; and had it not been that I fancied I had struck a richer vein in surgery by the revival of excision of the knee, I am certain that most of those cases which I referred to in my lectures on this operation last season would have been brought before you now as illustrations of amputation at the knee. Before I commenced excision I had amputated frequently at this part, and with the most gratifying results. One case I have recorded in my book on Surgery of a man who walked ninety miles in three days on such a stump, and here it is (fig. 101); and from all I have seen and known of this operation, I am greatly astonished that it has been performed so rarely. No doubt excision turned attention in another direction. But it might be asked, Why have those who object to excision, who have adhered to the old slashing system of amputation, not taken to this? I imagine that the ulcers, the sinuses, the abscesses, the disorganised synovial membranes, have all deterred surgeons as much from amputation in such questionable ground as it has deterred them from excision. Yet in excision how worthless have such objections been proved!—and have we not similar experience of amputation at the ankle-joint with disease in that articulation and the soft tissues around? for here (fig. 102) is

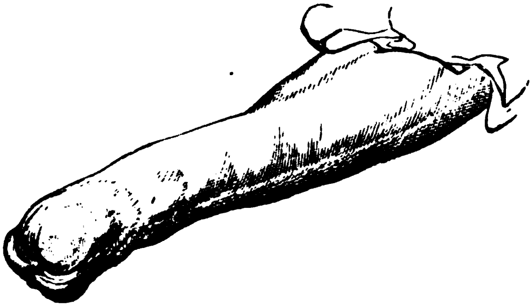

Fig. 101.

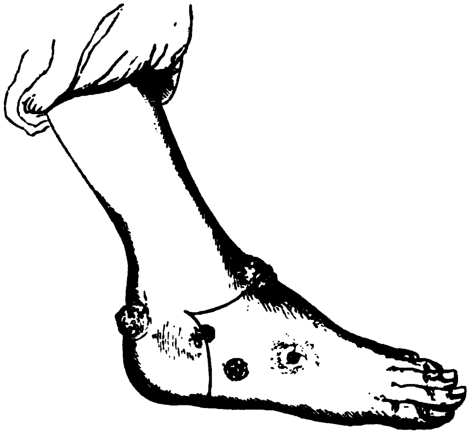

Fig. 102.

a condition in which that operation is quite legitimate, and here is the result after the lapse of a few months (fig. 103).

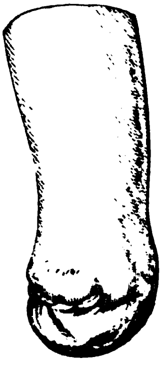

Fig. 103.

In this operation, I am not aware that any teacher has, more than myself, so strenuously drawn attention to one peculiar feature wherein it differs so much and so importantly from ordinary amputations in the limbs. In the forearm or arm, the leg or thigh, the coverings to form the stump are invariably shaped from the soft parts in these regions. But in amputation at the knee, the covering to the end of the femur, that which is to form so important a part of the stump, is preserved from the leg—a piece of surgery which I consider supremely conservative. Supposing that excision of the knee should yet be abandoned, why should not this operation take the place of the larger mutilation six or nine inches higher up?

When the condyles of the femur are sawn off in this operation, Mr Syme has stated his opinion that there is greater risk of serious inflammation in the broad cancellated surface of the bone than when it is exposed higher up in the ordinary operation. But whilst admitting some such cases, there is no positive proof from numbers of the correctness of this view, and it is quite contradicted by the successful practice of that gentleman in amputation at the ankle-joint (where a broad surface of tibia is almost always exposed by the saw), as also by the usual good results of excision. Moreover, no such evil seems to have occurred in the numerous examples recorded by Mr Carden. But in some of these cases the cancelli need not be exposed at all. The condyles and articular cartilage, being healthy, may be left. And here I cannot, as a zealous surgeon, but express my thanks and admiration to Mr Lane for having displayed what an excellent stump may be made in some instances by reserving the condyles and cartilages untouched, and covering them with a flap of skin merely from the front of the leg. Previously, in as far as I am aware, most operators had reserved a covering for the end of the femur from the calf of the leg, as represented in this sketch (fig. 104); but few had ventured to take the calf away and leave only a flap of skin. This, however, is an important feature in Mr Carden's practice. Here (fig. 105) is his own outline of the operation; and fig. 106 shows the recently dressed stump, with the cut surfaces in approximation.

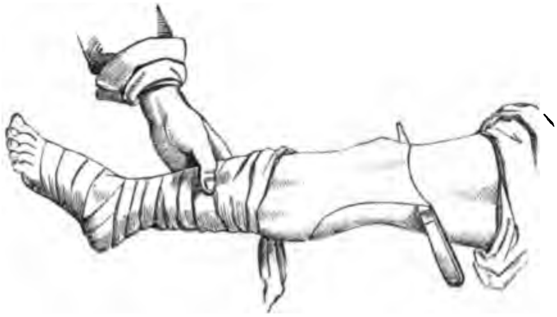

Fig. 104.

It remains to be seen whether such a thin covering or the fleshy substance of the calf will prove the best stump. It will also be an interesting matter for future observation whether a stump with the entire femur, or one with the condyles sawn off, will be best. No doubt, if this operation comes much into use, there will be a necessity in the majority of instances to remove the condyles; but if it were proved that a stump with the condyles is better, it would be the duty of the surgeon to preserve them on all proper occasions. I am not prepared to give a decisive opinion on such interesting and important points, but a minute's demonstration is worth an hour's lecture on such subjects; and here (fig. 107) I have the pleasure of showing a cast of the stump

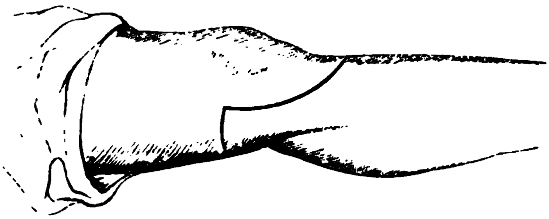
Fig. 105.

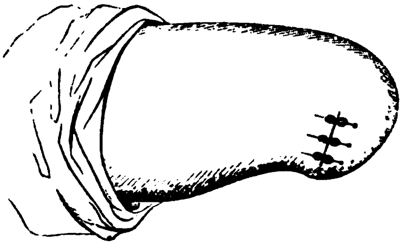
Fig. 106.

formed by Mr Lane in the way referred to, and another from my own cases of a like kind, excepting that the patella had not been retained as in Mr Lane's case, but in both of which the condyles and articular surfaces were preserved. Fig. 101 shows where the condyles were removed and the covering of the stump was made from the calf; and here is another from the practice of Mr Henry Smith, of King's College.

As a strong indication of how this operation is estimated by some of the active spirits of the day, I may refer to the opinions of Mr Butcher of Dublin, who, in his recent work on "Operative and Conservative Surgery," speaks of it with all that enthusiasm which characterises the writings of that very able and enterprising surgeon.

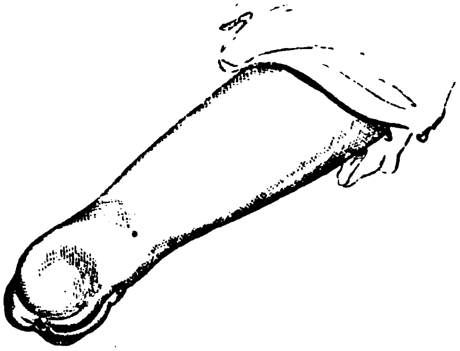
Fig. 107.

Lastly, as one of the greatest improvements in modern surgery, let me refer to amputation at the ankle-joint.

It is now about a quarter of a century since Mr Syme proposed a method of removing a diseased or damaged foot at the ankle, different in all respects from any previous proceeding. His idea was to preserve the ordinary tissue covering the lower surface of the os calcis, so that it might be brought up against the end of the tibia, and leave a pad almost equal to the normal substance, whereby a stump, such as is here represented in fig. 108, might be retained superior to any that could be procured from the leg, or from any of those flaps which had previously been proposed from the sides or surroundings of the ankle-joint. At this date it is hardly needful to show how this operation has taken with the profession. Like many others in surgery, it has its faults; but, take it with evil and good, I know of no amputation—no style or kind of amputation—which deserves more high consideration. There is everything associated with it to lead to perfection in our modern estimation of such a proceeding: a long stump, and a perfect covering to the end—a covering more perfect than that of any other stump; for the reason that the very bit of soft material on which we naturally stand is still preserved for the future basis of this support. Stumps in the upper extremity are put to little trial or strain, as compared with those in the lower; for these are always looked to as supporters of the weight of the body. The soft tissue under the os calcis is the only part of the lower extremity which has

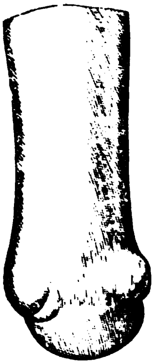

Fig. 108.

been designed by nature for this purpose; and, with a happy idea, Mr Syme proposed to reserve this tissue.

The general success of this operation has been highly satisfactory. Evils have followed in various instances; and in what operation, I may ask, do they not? As a whole, looking to the small part of the body necessarily removed, the great length of limb preserved, and the natural character of the end of the stump, I most cordially express my opinion that this is the greatest addition to amputation in modern times.

In saying this I do not overlook the proposal of Pirogoff to retain the end of the os calcis. This (fig. 103) is a good illustration. I consider the operation of the Russian surgeon a decided improvement on that of Mr Syme. Yet it is, in my opinion, only a modification, which, even should it ultimately be allowed by all to be an improvement, by no means detracts from the merit of Mr Syme for reserving a flap from the sole of the foot. The idea—one of the happiest in modern amputations—corresponds with that which I have insisted on as an important feature in amputation of the leg, where a flap or covering for the stump of the thigh is preserved from the leg.

It is not so much my object at present to compare one operation with another, as to mark the modern development of surgery; and, if I am not mistaken, this operation may, in regard to amputations, be considered as far ahead of any other in this department, and I therefore refer to it specially as one which pleasingly characterises the progress of surgery in the present century.

LECTURE XII.

ON OPERATIONS AND PRACTICAL SURGERY.

MR PRESIDENT AND GENTLEMEN, — Throughout the history of our profession, from the earliest date to the present time, distinctions have been drawn between Surgery strictly and Physic. The wisdom or necessity of drawing such distinctions is very questionable, particularly since the passing away of the dark days of surgery, when an inferior class acted under the orders of those who themselves could know but little of the art. As our profession gets older, the custom becomes less apparent, although in large towns and populous districts there will always be those who devote themselves specially and respectively to these departments. This, in my opinion, depends upon, and is determined by, natural habits and tastes rather than upon any actual necessity that the two should be disjoined, or that a union of skill in both is incompatible with man's mental and physical powers. I cannot myself see why there may not, should not, could not, be such a combination. Most of our legislative enactments on education seem to infer that our degrees and diplomas of the best stamp can be secured by those only who have acquired, and can display, a competent knowledge of each; and the impression seems to get stronger, that whilst a physician must be all the better for a good knowledge—ay, even power—in surgery, the surgeon will be a poor practitioner who has not a thorough knowledge of physic. One of our greatest lights in surgery, Sir Benjamin Brodie, who has but recently passed from amongst us, was as much distinguished in this respect as for his power in surgery properly so-called, and the professional reputation of Abernethy was as much based on blue pill and black draught as upon tying great arteries, opening abscesses, or any other surgical proceedings with which his name was associated. In fact, the term "pure surgery" should, in my opinion, be banished from our vocabulary. The term is one of sheer affectation. One hears of a "pure surgeon" every now and then, but I declare I have never known such an animal in my life! If any one endeavoured to realise in his own person the man of surgery, as one working with his hands alone, he would be left high and dry in his "purism"—a stranded wreck, of little use either to himself or his fellow-creatures. In these days of rail and electricity the strictly "pure surgery" required in Great Britain might be done by a dozen men, who, like the herniotomists and lithotomists of old, could travel from place to place, as their services might be required. But, fortunately, surgery in the present day stands on a more extended base, and we are delighted to call into use all the appliances to our art which raise it to a science. Without attempting to draw a line of distinction between the physician and the surgeon, as has often fruitlessly been done, I shall prefer to state that, in my opinion, so long as our profession exists there will doubtless be distinctions; and so, in the character of a "Simon Pure," I must limit my observations to matters "purely" surgical.

Now, with all the affectation referred to, it is a curious fact and feature in our department, that so long as a young man who has the diploma of a surgeon does not attempt operations on the living body, he may pass as a clever fellow, possibly a clever surgeon. If he tries his hand and fails, he must be content in future to work chiefly with the pen. If he succeeds and acquires reputation, he is for a time well-nigh worse off than the bungler. Enemies and friends say, "Ah, yes! he is very good with his hands, but he knows nothing else. He knows not when an operation should be done, nor can he treat a case properly, either before or after." Yet throughout all my experience the best operators have generally been the best pathologists, and as competent in practice otherwise—ay, even more so, than those who have been unable to cope with them in handicraft. The judgment in all pertaining to good surgery has been evinced as much (or more) by one as by the other, and the operator has had the superiority of both judging and acting. To deride a young surgeon because he displays great power with his hands is as unreasonable as to abuse an artist for superior skill with pencil and brush. Happily for the artist who excels, he gets credit for having a head to guide his hand, but the rising surgeon who shows skill in operations has to plod his way through obloquy, until at last he fairly wrings out the admission that he is good in other respects also.

Whatever opinion may be held on these matters, one thing is certain—that surgery and operations cannot be separated. Our skill has not yet enabled us invariably to treat disease and accident so as to cure without operation. Nature, despite man's efforts, will still hold on in diseased action; and accidents involving serious injuries and necessitating surgical operations must happen to the end of time.

It may be called a great surgical crisis when the question of an operation arises,—equal, if not greater perhaps, to the important time when the operation itself is to be performed. Supposing that the decision is for an operation, and that the time for action has come, I think that I may fairly appropriate part of this lecture to a subject which my experience leads me to believe is often much neglected.

Occasionally an operation remarkable for its bungling succeeds; again, one which might be done in a couple of minutes may extend its tardy course over a hundred, and yet do well: but because such instances succeed they ought not to be the rule for the future. They ought rather to serve as landmarks or beacons to point a better way. There is a carelessness and awkwardness evinced by many in the performance of surgical operations, hazardous to the patient and derogatory to the character of surgery. In every art perfection or improvement is aimed at, but I regret to have to make a partial exception as regards our own. Happily the examples are most numerous wherein men really have such objects in view; but some in high places have been careless—ay, incompetent in such matters. Yet what can be better for suffering and for surgery than that, when an operation is needful, it should be done with all that prearrangement, forethought, judgment, coolness, and decision which constitute perfection?

I have repeatedly seen surgeons proceed to operations with preparations signally deficient. No sponge, no lint, no strapping, no bandage, no dressing. I have seen, as stated in a former lecture, a flap in amputation of the leg made before it was discovered that there was not a saw in the apartment. I have seen lithotomy performed with a common catheter for a guide; and the same operation has been resorted to with a common hair-curling iron, instead of forceps, to extract the stone!

It is in dealing with hæmorrhage that the greatest defects are observable. The absence of good clean sponges in sufficient number is enough to mar the appearance of an operation even in the best of hands. I have heard a surgeon about to engage in such work say to the landlady or maid, "Have you such a thing as a sponge in the house?" I need not here dilate on the elegance of a domestic article of the kind; suffice it to say that I have looked with disgust at its application to a wound. Sponges are as essential to the satisfactory performance of an operation as plenty of water. The case cited by Sir Astley Cooper of a surgeon throwing down his knife and decamping in the middle of an operation is fortunately a solitary one; yet great embarrassments frequently arise, and chiefly among those who make little or no preliminary arrangements. He who has not calculated on what vessels may possibly be cut, will be the least prepared to meet emergencies; and I have generally observed that those with forethought have had least trouble on such occasions.

When blood flows, and that freely, I consider it characteristic of a good surgeon that, besides dealing with it promptly and decidedly, he should manage to conceal all traces of it as much as possible. There are some who seem to delight in the show of blood: thus, besides letting more flow than need be, they seem to take a pride in displaying it in all directions. They seem to calculate the brilliancy and magnitude of the operation by indications of blood being everywhere about. If the body-clothes and bed-coverings of the patient can be spotted all over or saturated, it is good; but better if, in addition, the blood finds its way through a mattress or two, and drips on the floor! A spirt here and there on the walls will be impressive; and if the operator and assistants be spattered from head to foot, so much the better! The man who glories in such sights, or takes no heed to prevent them, is likely to be pleased with a large display of white about the patient's dress, coverings, bed, or couch; and I have heard of such a one, not content with using towels for his hands, actually seizing the white bed-curtains and wiping his bloody paws! It seems a glorious thing in the estimation of such an operator that servants should carry away basins or pails full of water tinged, at least, with blood. Clots, of course, have an additional effect; and I have known many a simple operation, involving the loss of but little blood in reality, estimated on a very large scale from the circumstance that the tinged fluid has all been taken for blood. Hence it is no uncommon thing to hear, from friends, of a patient having lost quarts—even gallons—of blood when Mr So-and-so performed the wonderful operation! Now, all these things I hold to be contrary to the best characteristics of good surgery. My impression is that all the horrors of our art should be concealed from common observation as much as possible. Happily, in most of the important operations this can be perfectly done, in as far as the patient is concerned, under the benign influence of anæsthesia; but, whether as regards patients, friends, or onlookers, I consider it of importance to the character of surgery that such matters should be attended to. I remember, when venesection was practised more than in the present time, that the operator was considered a bungler if he let a drop of blood be seen after the basin was taken away; and I have often thought that it would be well if such an idea could be impressed on those alluded to, who seem, as it were, to gloat on the sight of blood. He may consider himself a happy man who can boast of clean hands in this world of turmoil. One would think that a surgeon, in this part of his duties, might at all events set to work with a clear conscience in this respect. Yet I have seen a man of fame proceed from one operation to another with his hands covered with the first patient's blood.

Demeanour in an operation I hold to be of great consequence as characterising good surgery on such occasions. I remember being early impressed on this subject. Of two surgeons of great reputation as operators, one could not proceed a step without speaking to or consulting some one near. Even a pupil was appealed to, if no one of higher rank was by. The other would begin and finish without reference or a word to any one. On witnessing such scenes more than once, an impression arose that the one had no confidence in himself, but that the other was eminently endowed in this respect. There was in reality no lack of courage, knowledge, or skill with the one, but his demeanour was bad; and I need scarcely tell you that the other became the general favourite. No doubt even the greatest surgeons must every now and then deem it requisite to consult or to meditate during an operation; but the less the better for the character of surgery and the surgeon. A consultation during an operation detracts sadly from both. Yet a moment's hesitation will sometimes display the great master under emergencies! On such a pause I have seen the whole course of an operation altered, and, where for an instant all seemed chaos, a brilliant result effected.

There has been no consultation, only a self-communing. The knowledge acquired in years has flashed through the mind, and the pause has been the crisis of a well-deserved success.

No operation can be perfectly done without efficient and well-trained assistants. The surgeon's style may often be judged by that of his assistants. I am far from holding myself as a perfect model regarding all these features that I have been referring to; yet I hope for pardon when I state, that I considered it one of the highest compliments ever indirectly paid to me when a practitioner, who had been present at a somewhat lengthy operation, asked privately if there had been any quarrel with myself and assistants. When desired to give a reason for such a strange question, he stated that he had remarked during the operation that scarcely a word was exchanged amongst us! That was just what had been pre-arranged; and I have a recollection to this day that the operation was well performed by all of us.

The very attitude of a surgeon during an operation will often indicate his superiority, or the reverse; but this, I think, will be best illustrated by a reference to hospital practice. The most extraordinary differences will often be seen in the operating theatre. The style here must needs be peculiar; for not only has the operator to seek the best light for his patient's sake and his own, but he has to make the best display he can for the sake of pupils and onlookers. His own front, his face and hands, must almost invariably be towards the benches; and my own impression is, that it almost amounts to a separate study to do that in the operating theatre, to the satisfaction of a large number of onlookers, which might be admirably done in private before half a dozen assistants and witnesses. The non-professional public cannot be expected to understand the phases between good, bad, and indifferent teaching; and I doubt if it is thoroughly appreciated even in professional ranks. No corporation should be more thoroughly interested in such matters than this College; indeed, some legislation has been made recently on the subject of operative surgery, giving it more importance than heretofore in professional education; and I hope that I may not be going beyond my province as Professor of Surgery here, when I call attention to the manner in which operations should or might be done in public.

Whilst all the points I have already referred to merit as much attention in public as in private, there is a necessity for display, if I may so call it, in the operating-theatre, which is not required in a private house. The display is, in other words, a demonstration of the operation, and he who shows this to the greatest perfection is most likely to get the reputation of being the best operator—the best practical teacher.

A bad operator, who thinks little of what he is doing, often stands in his own light as regards the sun, but he just as frequently commits as great an error in standing between the patient and pupils. Lithotomy is amongst the few operations in which this position is sanctioned;

but here I have often thought that pupils might see and learn as much by looking in the surgeon's face as at the breech of the patient.

Supposing I had to perform an operation, and stood between you and the patient thus, with my back to the audience, and assistants around so disposed as to cover the part from view, you would naturally be annoyed, as your chief object in sitting there would be to see the proceeding.

In recent times, I have occasionally thought that in drawing the attention of my pupils to this subject, I may have exaggerated, but I have reason to believe that, after all, I am still within the bounds of reality, for here (fig. 109) is a sketch taken within the last twelve months of a scene in the theatre of a great English hospital, where a grand object is "to teach the young idea," which amply bears me out. The operation was amputation in the thigh, and even the artist who made the sketch thought it strange that the man, the leg-holder, a sort of scene-shifter on the occasion, who of all in the theatre had the broadest shoulders, should stand between the operation and the onlookers on the benches.

Again, as a teacher, it would, in my opinion, be my duty, supposing the operation to be an amputation, to show the part just removed, to sketch the history of the case, to point out the incurable disease or damage, or the uselessness of the member had it in reality been preserved; to speak of the kind of operation performed, of the place of selection, and of the probable condition and usefulness of the limb or body afterwards. All these, and many other things, might be brought attractively and usefully under the notice of pupils,—for it must ever be borne in mind that they are intended wholly for pupils. In contrast to this, I shall tell how

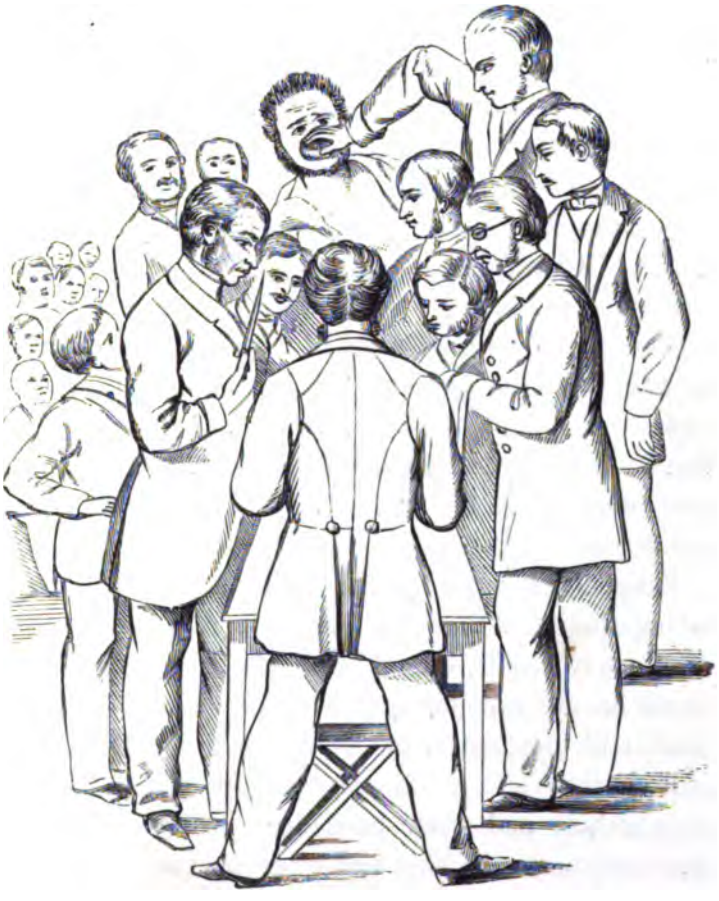

Fig. 109.

I have seen an hospital surgeon conduct himself. He has entered the theatre, addressed himself to his work, got it over to the best of his power,—that is, as best he could,—washed his hands (perhaps not), regaled himself with a snuff, nodded, winked here and there, and shaken hands with an acquaintance or two; then gone on with another case in a similar manner, and finally left the theatre without any indication of consciousness that pupils have been present!

Some may deem all these things unworthy of special notice. My own impression is that they are of considerable importance. To be a teacher is one of the attributes of a modern hospital surgeon. His general usefulness in the hospital will depend greatly on his powers of giving good instruction to pupils; and of this I am certain, that much of his own success in life will depend upon the manner he acquits himself at his public post.

Simplicity in regard to the performance of operations is important. All ostentation, excepting the demonstrations to pupils, should be avoided. It is ridiculous to see an old hospital surgeon hold a stone above his head, still clutched in the forceps as he has just taken it from the bladder. It looks as if, in his estimation, such a thing had never been done before, or as if he had never done the like, and gives the impression, too, that he considers the extraction of the stone as the grandest thing in all his management of the case. Now, whilst I consider lithotomy, when well performed, as one of the finest of the surgeon's opportunities for displaying operative skill, I look upon the mere extraction of the stone as only one step—a great one, certainly—in the treatment of the case; but it is unworthy the character of a first-class surgeon to show special exultation at this particular crisis. Better that the stone should be quietly laid aside until the patient is taken to bed, and that the operator should address himself to the wound, instead of flaunting his trophy over his head, with his back still to the onlookers. Part of *Hamlet's* advice to the players might, with some slight modification, be appropriately given to such surgeons:—

> "Suit the word to the action,
> The action to the word,
> Nor saw the air with your hand."

Next to good demeanour on the surgeon's part, I place that of his assistant. The best of operators may make but indifferent work if he is ill supported by those near him; but the manner of the assistant is, in truth, a tolerable criterion of the skill of the principal. He cannot always have the same, and he will generally be aided in accordance with the instructions which he lays down beforehand. Assistants, like principals, vary much in quality. Whatever responsibility may be put upon them, I always consider that the surgeon has the chief. When errors or failures happen, they depend almost invariably upon the surgeon himself; and I have never felt much sympathy with any one who has attempted to lay blame on those near him to excuse some bungling or blunder of his own. For my part, I have had much reason to be satisfied with the efficiency of my assistants; and if I had fault to find, it has been with some outsiders, who have stood in need of the Harrow School custom of having their trousers-pockets sewed up, in order to let their hands be loose and ready for the work before them.

Simplicity of instruments I take to be a good indication of an operator's skill. Even in the most complicated proceedings few comparatively are required; and the best operators I have seen have invariably trusted more to head and hands than to a great number and variety of articles from a surgical *armamentarium*. Surgeons will always hold varieties of opinion as to number, shape, size, and other features regarding the instruments they like to use. But in an indifferent hand the best instruments will fail; and the trite and homely saying, that a bad reaper never has a good sickle, is, with due modification, equally applicable to the surgeon who has not the proper use of his hands. In these observations it may be noticed that almost everything I have said has reference to forethought and prearrangement with regard to surgical operations. It is often a test of a surgeon's worth when he is called upon to give an opinion upon a case just as it is first brought before him. To form his opinion, give it, and act upon it, comprises the principles and practice of surgery as regards that case. At a glance, it seems as if there were nothing preliminary in all this; but, in reality, the man's whole knowledge and experience have in a manner constituted the prearrangements for the application of his skill under the circumstances. It is seldom, indeed, that a surgeon is called upon to operate at a moment's notice. Generally he has hours, days, or months to think upon what may be required. Now, it seems to me unpardonable that there should be serious neglect when there is full time to prepare. I have heard of a surgeon being called to the country to perform lithotomy who, when about to see his patient, asked the village practitioner "if he happened to have any lithotomy instruments by him," having neglected to bring his own! It is not difficult to understand how a gentleman of this stamp has, with even large opportunities, made but an indifferent figure in the surgical world.

There is scarcely a thing done in our social relations in which forethought and pre-arrangement are not absolutely requisite. Much of our comfort in life, our meals, our meetings, our business transactions, are all so regulated. What spectacle, from "Punch" to a grand review, does not depend upon these? What great battle has ever been fought on chance? A great surgeon has been not inaptly compared with a great general: both have to do largely with human life. A battle, if one there must be, is a grand crisis with the soldier. An operation, if one cannot be avoided, is a grand crisis with the surgeon. What would we think of a general who went into battle without pre-arrangement, and what should we think of a surgeon who neglectfully stumbles unprepared upon his crisis? These observations are not made without reasonable grounds. There are some men who think so little or so erroneously, that I have seen the body amputated from the leg—fortunately, however, on the dead subject; but I have seen a similar process begun on the living by an hospital surgeon, when happily his hand was arrested in time!

It is worse than affectation, it is ignorance of the true duties of the surgeon, a want of appreciation of the grand characteristics of surgery, that leads to such culpable trifling with our noble occupation; and I hope that I may not be considered in error by raising my humble voice, as I have now done, against such dealing with a critical part of an essential of true surgery.

After all I have said, I feel that I cannot go wrong in referring to the management of cases before and after the grand crisis of an operation; for here I shall tread on ground which, as already stated, some consider of higher quality. I shall leave the simply mechanical or art-work of our profession (dare I call it artistic?), and take to the so-called higher department.

I hold it impossible to separate the diagnostic part of our occupation from the treatment; for in reality there can be no sound method of practice which is not founded on correct diagnosis. This, in fact, gives us our exemption from empiricism. In general we profess to see the nature of a case, and to act accordingly. Yet what enormous variety there is in this action, and how seldom half a dozen men will think and act in all respects alike in any imaginable case! To keep to those requiring operations, much has been said regarding what has been called the preparatory and after treatment. There are operations in which no time is permitted for preparation; herniotomy, tracheotomy, and immediate amputations, are of that kind. Even in these, some periods are, perhaps, more favourable than others. In many instances I may say, that possibly the earlier the better; yet a judicious surgeon might wish to watch, particularly in the case of shock after accident. But it is chiefly to the instances where there is time for preparation that I wish to refer at present. Supposing a tumour, a chronic disease of joint, of bone, or of the urinary organs, incurable otherwise, of what does this treatment consist? If the tumour is not malignant, in all probability the patient is in rude, or the best health that can be expected for his age. The custom of bringing the strength, or constitution, as the term goes, in such a case down somewhat below par, by purging and bloodletting, seems to have been abandoned, and very properly so in my opinion. In other instances suffering will already have effected such a change, and it may often be the object of the surgeon to improve the shattered health before submitting the constitution to a trying ordeal. There are cases were we may feel convinced that time, a judicious course of medicine, wholesome food, and good air, may effect some restoration. There may be a lingering hope that the disease may pass away, or get well under such treatment; but in the majority of instances, if an operation seems inevitable, I believe that the shorter the preparation the better. The patient is thus relieved at an early date from that which would continue to harass him mentally as well as bodily, and the prolonged strain of the disease is avoided. But it is affectation to talk of superior skill on these points, particularly if it is to be displayed by way of a course of medicine. I generally suspect a man's qualities who shows much faith in preliminaries in these instances; and even should the end be a cure without an operation, I should question his knowledge all the more, if he seemed to think that he was doing that which nature was in reality effecting—possibly despite his physic. For my own part, I confess to a great desire to see what nature will do, for I fancy that operations and mutilations may thus occasionally be avoided; but when once hope is lost, then direct surgical interference will generally be found the most effective step. Nature has then a chance—the best chance—to show her resiliency; and where her powers are as yet but little sapped—where the organism is still perfect—she rarely fails to answer pleasingly to judicious surgical interference.

You may thus perceive that I place but little confidence in so-called preparatory treatment. A moderate share of common sense, and a simple dose or two, will go further than the most elaborate course of physic. Even greater importance, naturally enough, has been put on after-treatment than on that before an operation. Here, too, there is a strong call upon common sense—that being best dictated by the mind most highly imbued with the characteristics of good surgery. To wait quietly on nature under such circumstances, and to aid her gently and judiciously, are the best merits of the surgeon. I confess to having much more reliance in surgical management at this stage; but even here good sense must be a predominating quality. We may set aside bloodletting and purging here also as being out of the question, except in rare and peculiar cases. Sir Astley Cooper has related how a patient with a compound fracture got a purgative in overdose, and was so disturbed that evil came upon the wound, and he died. This may be taken as an example of injudicious interference. Constipation is an evil of less moment than disturbing or irritating nature in her local work; and purging and bloodletting amount to abstractions from her powers at a time when to give strength is the true philosophy. I am disposed to put it as an axiom that, up to a late period of life, nature is more prone to repair than to destroy. We see this strongly marked in both vegetable and animal life. The younger the life the more strongly is this evinced; and in other instances she must be allowed time and favourable circumstances for the perfection of her work. If a limb is lopped off a tree of moderate age, she will cover the wound with a cicatrix of bark just as certainly as seasons come round. It may be one season, or it may be half a dozen or more, in accordance with the size of the wound or open surface. Just as certainly will she close a wound in the animal frame; but, in addition, she does it more rapidly.

It would be going from my true path were I to discuss such subjects at length—I should be going *ultra crepidam;* but the analogy is worth bearing in mind, and I refer to it at present chiefly with the view of drawing attention to this fact, which the attendant on vegetable life knows so well—that a certain time is absolutely necessary for nature to do her work; that we can no more hurry her on than can the farmer get his harvest months before the allotted time. It is not to be wondered at that patients should fancy that the surgeon has the power of thus working, but it is to me amazing that he should affect that power. Of course it is his duty to place parts so that nature may have a fair chance of doing what is wanted; but even with the nicest approximation of surfaces, nature will not always effect immediate union. All the medicines in the world, all local balsams that can be imagined, will have no influence in some instances. As well might we affect to arrest or stay the hand of earthly fate. Yet, with all these views, I am a great believer in after-treatment, and fancy that a surgeon's skill may be justly gauged in many respects by his conduct on such occasions.

I have already alluded to this subject in a previous lecture, and need say little more upon it. Quietude is all important. If you wish parts to unite, you must resort to mechanical means to keep them in apposition; if you want them kept asunder, you must be equally on the alert. But whilst all seem tolerably agreed as to local treatment, there is great variety of opinion as to constitutional. It is here, perhaps, that the little weaknesses of our intellect are displayed chiefly in the fact, that we deceive ourselves with the impression that we are doing that which nature is bringing about in her own way. Some fancy that the perfection of treatment is to keep a patient low; others that rather a stimulating course should be followed, particularly if the patient's condition is not satisfactory. For my own part, I strongly advocate giving nature much of her own way here also. If the patient is much exhausted by previous disease, he must be vigorously and judiciously supported. If, on the other hand, he has been suddenly prostrated whilst in full health, there need be no call for stimulants. Such a patient is almost certain to have more or less sympathetic fever, and until immediate union has taken place, or suppuration has supervened, the fever may be kept in check by some ordinary means. But unless some serious mischief be setting in, such as inflammatory deposits elsewhere, it may well be doubted if anything special be required, beyond seeing that the skin, kidneys, and bowels are all acting fairly. A partial want of appetite, a slight acceleration of the pulse, ay, even considerable excitement, need cause little anxiety, provided the tongue be clean and moist, and the skin gently bathed in perspiration. But these are familiar subjects, and I need not dwell on them. There is much room for judicious hygienic management at such a time. The less medicine the better; and experience has convinced me, that the nearer a patient is kept to what may be considered his natural style of living, the less will be the shock from operation, and the more rapid will be his recovery. Indeed, I am convinced that in the majority of surgical maladies this is the safest course to follow. If a man takes beer, spirits, or wine, I believe it unwise to withdraw them entirely, unless for special reasons in a particular case. In various forms of venereal, for example, it is common to alter a man's diet, particularly to keep him very low. I not only doubt the wisdom of this, but am convinced that in many instances much harm is the result. But I am touching ground scarcely within my present scope, and shall only repeat what I have already stated regarding treatment after operations, that in my opinion the nearer the patient is kept to a normal condition the better will be the progress of the case.

My object in this lecture has been to endeavour to place the cutting operations in surgery upon a proper footing. Because a man, even a most accomplished medical man, cannot appreciate or enact this part of our profession, it is most absurd that he should abuse and attempt to depreciate it; and, above all, it is highly improper that such an important step and crisis as an operation should be held as a proceeding to be got over in any way. The common saying, that "what is worth doing is worth doing well," is surely as applicable where human life is at stake, as to the ordinary affairs of man; and as I hold that hospital surgeons, and those in public appointments to large institutions, should be model men, each according to his abilities and opportunities, I have ventured to refer to public practice, or teaching practice, as it might be called, in the way I have done, because I think, with all humility, there is ample room for improvement.

Whilst estimating highly, as I do, the value of well-devised and well-executed cutting operations, and holding the opinion that these constitute the highest department of what some affectedly call "pure surgery," they in reality amount to a comparatively rare portion of true operative surgery. Many people have the idea, that a surgical operation must of necessity be done with a cutting instrument, but it may be said with truth that probably not a tithe of manual surgery is of this kind. The varied applications of the fingers and hands in diagnosis, in dressing wounds and sores, in strapping and bandaging, in tying threads and making knots, in setting dislocations and fractures, are all, in my opinion, as much in the department of operative surgery as when the knife is in use; and what man of experience will not admit that catheterism has often cost him more trouble and anxiety than lithotomy? These are "pure surgery" as much as puncturing with a lancet on the face for erysipelas, or cutting from hip to heel with a bistoury for the same disease. I will not admit that this manual practice is less worthy of consideration than, or is of inferior grade to, wielding a pen. The popular idea is, that when the pen is used, some deeply garnered, highly cultivated skill is laid on paper in the form of a prescription; and so it may be. But why should it not be allowed that the correct wielding of a knife by the surgeon emanates from the brain as well?

It is the pride of modern surgery to prescribe as well as to act. There is head work in it as well as hand work. Without action, prescription would be useless: without prescription, surgery would be without soul!

I have endeavoured in this lecture to give each department its fair place and characters without disparagement to others; and, regarding all that I have spoken of to-day, there need be no doubt that favourable progress has been made in this the nineteenth century. Cheselden boasted that his first twenty-five operations for stone were witnessed by "above twenty" persons. There was no medical press—no "fourth estate"—in his day. Now, in our hospital practice, we can refer to witnesses by the hundred; and addresses like these are not confined to magnates, such as I see before me, but are sent by our journals over the length and breadth of the world.

Sir and gentlemen, permit me to offer my thanks for the patient hearing which you have given to my humble efforts to fulfil the most interesting, and to me the most responsible public duty which I have ever been called on to perform.

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